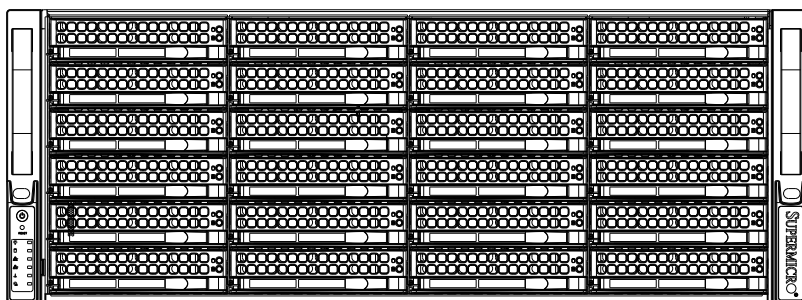


SUPERO[®]

SC847J CHASSIS SERIES



SC847E16-RJBOD1

SC847E26-RJBOD1

USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC847J chassis. Installation and maintenance should be performed by experienced technicians only.

This manual lists compatible parts available when this document was published. Always refer to the our Web site for updates on supported parts and configurations.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with this chassis and describes the main features of the SC847J chassis. This chapter also includes contact information.

Chapter 2: System Safety

This chapter lists warnings, precautions, and system safety. It is recommended that you thoroughly familiarize yourself with installing and servicing the chassis and all safety precautions.

Chapter 3: Chassis Components

Refer here for details on this chassis components including the fans, hard drives, air shrouds, and other components.

Chapter 4: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the chassis control panel, as well as other LEDs located throughout the system.

Chapter 5: Chassis Setup and Maintenance

Follow the procedures given in this chapter when installing, removing, or reconfiguring components in your chassis.

Chapter 6: Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

This section lists compatible cables, power supply specifications, and compatible backplanes. Not all compatible backplanes are listed. Refer to our Web site for the latest compatible backplane information.

Appendix A: Cables and Hardware

This section provides information on cabling, and other hardware which is compatible with your chassis. For complete information on supported cables and hardware, refer to the Supermicro Web site at www.supermicro.com.

Appendix B: Power Supply Specifications

This chapter lists the specifications of the power supply provided with your chassis. For additional information, refer to the Supermicro website at www.supermicro.com.

Appendix C: SAS2-846EL Backplane Specifications

This section contains detailed specifications on the SAS2-846EL1 and SAS2-846-EL2 backplanes. Additional information can be found on the Supermicro Web site at www.supermicro.com.

Appendix D: SAS2-847EL Backplane Specifications

This section lists detailed specifications on the SAS2-847EL1 and SAS2-847EL2 backplanes. Additional information can be found on the Supermicro Web site at www.supermicro.com.

Appendix E: SC847 Chassis Internals and Externals

This section contains detailed specifications SAS2-847EL1 and SAS2-847EL2 backplanes. Additional information can be found on the Supermicro Web site at www.supermicro.com.

Table of Contents

Contacting Supermicro.....	iii
Chapter 1 Introduction	
1-1 Overview	1-1
1-2 Shipping List.....	1-1
1-3 Where to get Replacement Components.....	1-2
1-4 Returning Merchandise for Service.....	1-3
Chapter 2 System Safety	
2-1 Overview	2-1
2-2 Warnings and Precautions	2-1
2-3 Preparing for Setup.....	2-1
2-4 Electrical Safety Precautions	2-2
2-5 General Safety Precautions	2-3
2-6 System Safety	2-3
Chapter 3 System Interface	
3-1 Overview	3-1
3-2 Control Panel Buttons	3-2
3-3 Control Panel LEDs	3-2
3-4 Drive Carrier LEDs.....	3-4
SAS/SATA Drives	3-4
SCSI Drives.....	3-4
Chapter 4 Chassis Setup and Maintenance	
4-1 Overview	4-1
4-2 Removing the Chassis Cover	4-2
4-3 Installing Removable Hard Drives.....	4-3
4-6 System Fans	4-6
4-7 Power Supply	4-8
Chapter 5 Rack Installation	
5-1 Overview	5-1
5-2 Unpacking the System	5-1
5-3 Preparing for Setup.....	5-1
Choosing a Setup Location.....	5-1
5-4 Warnings and Precautions	5-2
Rack Precautions	5-2
General Server Precautions.....	5-2
5-5 Rack Mounting Considerations	5-3

	Ambient Operating Temperature	5-3
	Reduced Airflow	5-3
	Mechanical Loading	5-3
	Circuit Overloading.....	5-3
	Reliable Ground	5-3
5-6	Rack Mounting Instructions.....	5-4
	Identifying the Sections of the Rack Rails.....	5-4
	Locking Tabs	5-5
	Releasing the Inner Rail	5-5
	Installing The Inner Rails on the Chassis	5-6
	Installing the Outer Rails on the Rack.....	5-7
	Standard Chassis Installation	5-8
	Optional Quick Installation Method.....	5-9
	Adapters for Round and Threaded Hole Racks	5-10

Appendix A SC847J Cables and Hardware

Appendix B SC847J Power Supply Specifications

Appendix C SAS2-846EL Backplane Specifications

Appendix D SAS2-847EL Backplane Specifications

Appendix E SC847J Chassis Internals and Externals

Chapter 1

Introduction

1-1 Overview

Optimized for enterprise-level heavy-capacity storage applications, Supermicro's SC847 JBOD chassis features up to 45x (24 front + 21 rear) 3.5" hot-swap HDD bays. The SC847 server chassis offers the option to reduce the number of HDDs to 36 (24 front + 12 rear) allowing for an optional motherboard to be installed.

The SC847J design provides high-density storage in a 4U form factor, with high power efficiency, optimized HDD signal trace routing and improved HDD carrier design to dampen vibration and maximize performance. Equipped with a 1400W (Gold Level) high-efficiency redundant power supply and five hot-plug redundant cooling fans, the SC847J is a reliable, high-quality storage workhorse system.

1-2 Shipping List

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model <http://www.supermicro.com/>

SC847J Chassis			
Model	CPU	HDD	Power Supply
SC847E16-RJBOD1	DP/UP	45x (JBOD) SAS/SATA	1400W redundant (Gold Level)
SC847E26-RJBOD1	DP/UP	45x (JBOD) SAS/SATA	1400W redundant (Gold Level)

1-3 Where to get Replacement Components

Though not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list of Supermicro Authorized Distributors/System Integrators/Resellers can be found at: <http://www.supermicro.com>. Click the Where to Buy link.

1-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 2

System Safety

2-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in order given should enable you to have your chassis set up and operational within a minimal amount of time. This quick setup assumes that you are an experienced technician, familiar with common concepts and terminology.

2-2 Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and eletromagnetic fields are generated.

The system must be placed near at two grounded power outlets. When configured, the SC847J chassis includes one primary and one redundant power supply.

2-3 Preparing for Setup

The SC847J chassis includes a set of rail assemblies which includes mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before you begin the installation procedure.

2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC847J from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high-voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules (not necessary for hot swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.
- Serverboard battery: CAUTION - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

2-5 General Safety Precautions

- Keep the area around the chassis clean and free of clutter.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6 System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing any board from its antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. SC847J models have two buttons on the chassis control panel: A reset button and a power on/off switch. This chapter explains the meanings of all LED indicators and the appropriate responses you may need to take.

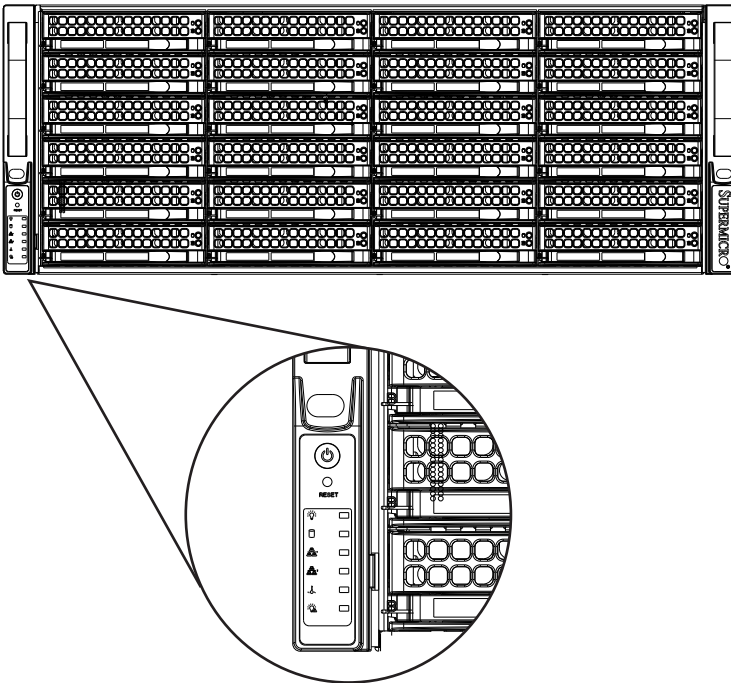


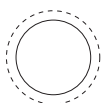
Figure 3-1: Control Panel

3-2 Control Panel Buttons

There are two push-buttons located on the left handle of the chassis. These are (in order from top to bottom) a power on/off button and a reset button.



Power: The main power button is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.



Reset: The reset button is used to reboot the system.

3-3 Control Panel LEDs

The control panel located on the left handle of the SC847J chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



Power: Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.



HDD: Indicates IDE channel activity. SAS/SATA drive, and/or DVD-ROM drive activity when flashing.



NIC1: Indicates network activity on GLAN1 when flashing.



NIC2: Indicates network activity on GLAN2 when flashing.



Overheat/Fan Fail: When this LED flashes, it indicates a fan failure. When continuously on (not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists.



Power Failure: When this LED flashes, it indicates a failure in the redundant power supply.

3-4 Drive Carrier LEDs

Your chassis uses SAS/SATA.

SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

- **Blue:**

Solid on = Drive is present and available.

Blinking = Drive is actively being accessed.

Each Serial ATA drive carrier has a blue LED. When illuminated in a solid on state, this blue LED (on the front of the SAS/SATA drive carrier) indicates drive activity. A connection to the SAS/SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:**

Solid on = Drive failure

Blinking = RAID activity

When the red LED is blinking, it indicates that the system is either building, initializing or rebuilding RAID.

SCSI Drives

This chassis does not support SCSI drives at this time.

Chapter 4

Chassis Setup and Maintenance

4-1 Overview

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tool you will need to install components and perform maintenance is a Phillips screwdriver. Print this chapter to use as a reference while setting up your chassis.



Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warnings/precautions listed in the setup instructions.



Safety Warning: Before performing any chassis setup or maintenance, it is recommended that the chassis be removed from the rack and placed on a stable bench or table. For instructions on how to uninstall the chassis from the rack, refer to Chapter 5 Rack Installation in this manual.

4-2 Removing the Chassis Cover

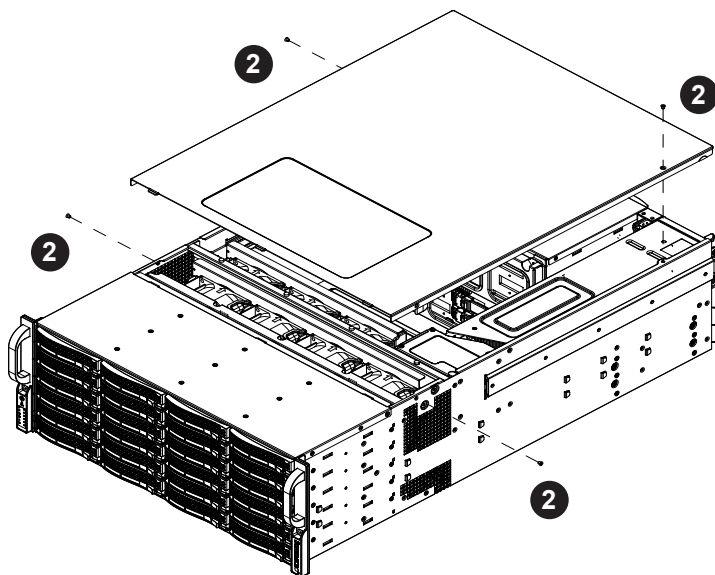


Figure 4-1: Removing the Chassis Cover

Removing the Chassis Cover

1. Unplug the chassis from any power source
2. Remove the screws securing the cover to the chassis.
3. Lift the cover up and off the chassis.



Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

4-3 Installing Removable Hard Drives

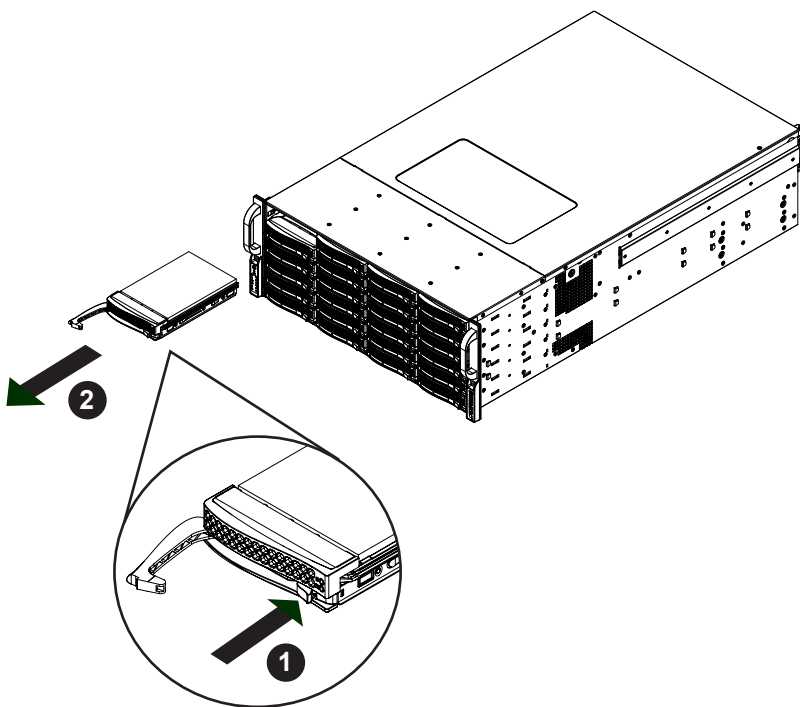


Figure 4-2: Removing a Hard Drive Carrier

Removing Hard Drive Carriers from the Chassis

1. Press the release button on the drive carrier. This extends the drive carrier handle.
2. Use the handle to pull the drive carrier out of the chassis.

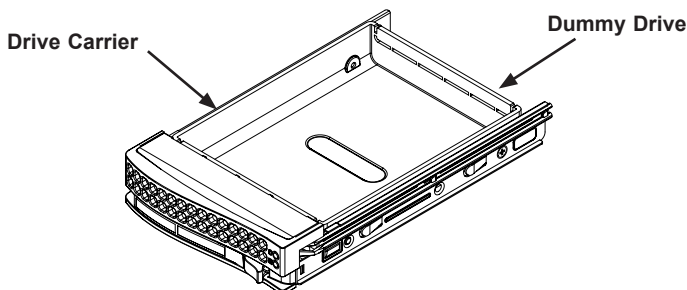


Figure 4-3: Chassis Drive Carrier

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help to promote proper airflow for the drive bays.



Warning: Except for short periods of time (while swapping hard drives), do not operate the server with the drives removed from the chassis drive bays.

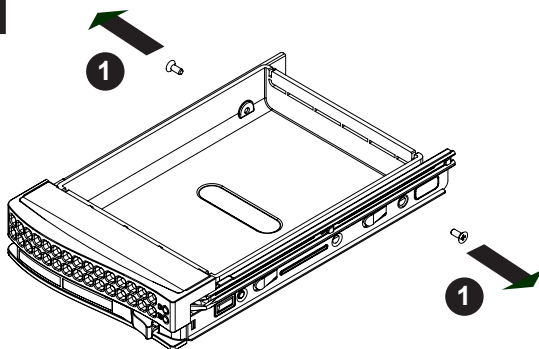


Figure 4-4: Removing the Dummy Drive from the Carrier



Warning! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at <http://www.supermicro.com/products/info/storage.cfm>

Installing a Hard Drive to the Hard Drive Carrier

1. Remove the two screws securing the dummy drive to the drive carrier and remove the dummy drive. Place the hard drive carrier on a flat surface such as a desk, table or work bench.

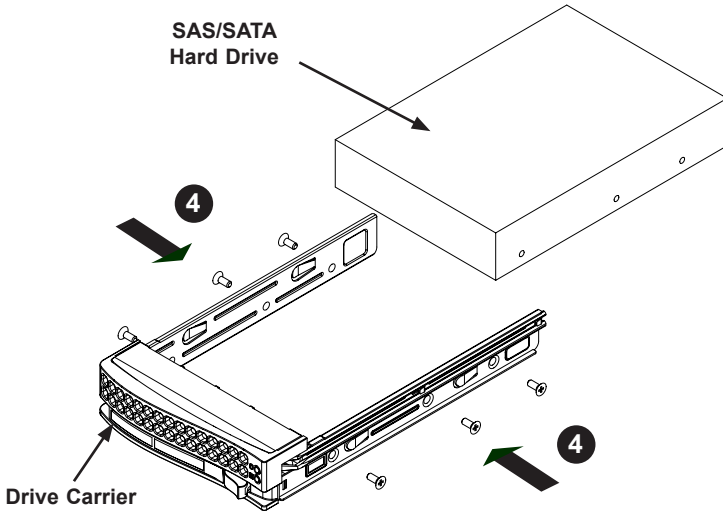


Figure 4-5: Installing the Hard Drive into the Carrier

2. Slide the hard drive into the carrier with the printed circuit board side facing down.
3. Carefully align the mounting holes in both the drive carrier and the hard drive.
4. Secure the hard drive to the carrier using six screws.
5. Replace the drive tray into the chassis. Make sure to close the drive carrier handle to lock the drive carrier into place.

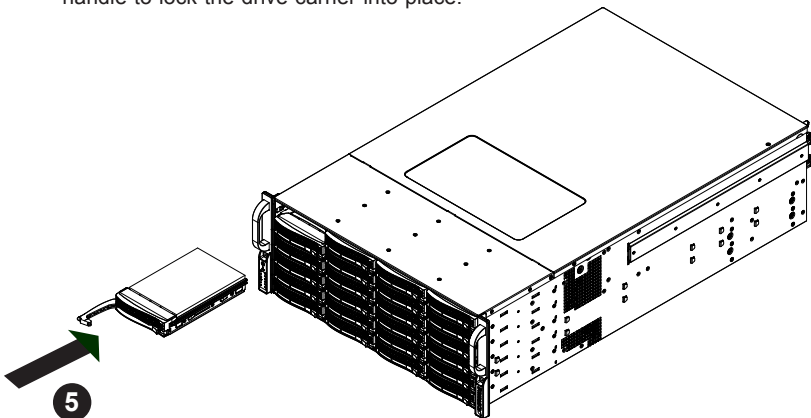


Figure 4-6: Installing the Hard Drive

4-6 System Fans

Seven hot-swappable, heavy-duty fans provide cooling for the chassis. These fans circulate air through the chassis thereby lowering the chassis internal temperature.

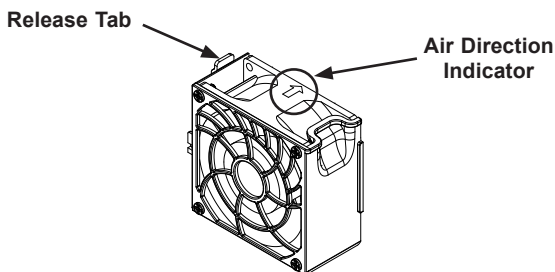


Figure 4-7: System Fan

Replacing a System Fan

1. Open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis cover open.)
2. Remove the failed fan's power cord from the serverboard.
3. Press the fan release tab to lift the failed fan from the chassis and pull it completely out of the chassis.
4. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
5. Check that the fan is working properly before replacing the chassis cover.

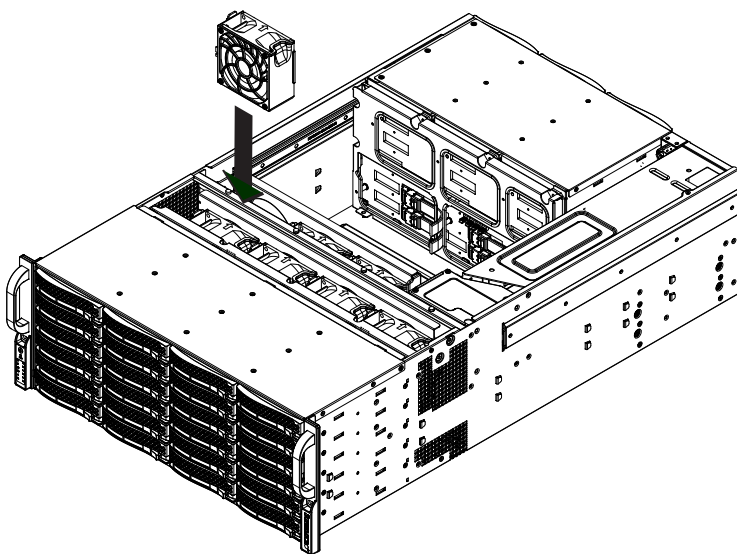


Figure 4-8: Placing the System Fan

4-7 Power Supply

The SC847J chassis has a 1400 Watt high-efficiency redundant power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Redundant power supplies are hot-swappable, and can be changed without powering down the system. New units can be ordered directly from Supermicro (see contact information in the Preface).

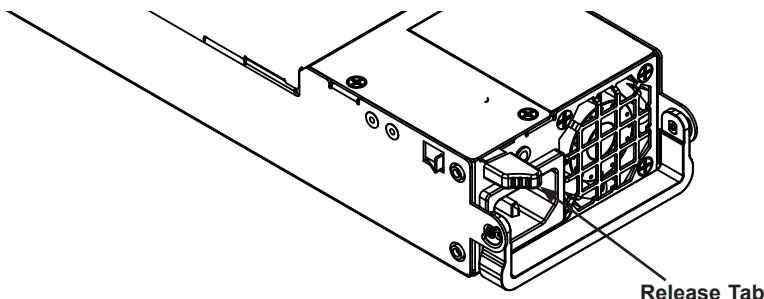


Figure 4-9: Power Supply Release Tab

Changing the Power Supply:

1. If your chassis includes a redundant power supply (at least two power modules), you can leave the server running and remove only one power supply. If your server has only one power supply, you must power down the server and unplug the power cord.
2. Push the release tab (on the back of the power supply) as illustrated.
3. Pull the power supply out using the handle provided.

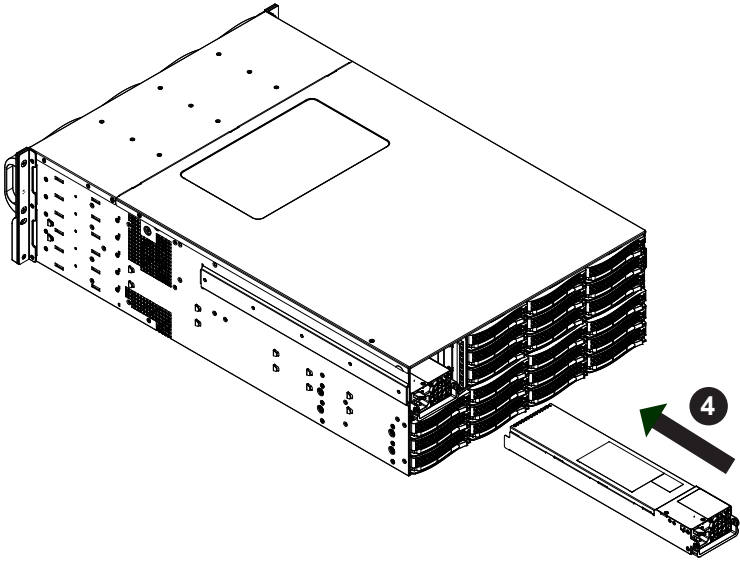


Figure 4-10: Power Supply Release Tab

4. Replace the failed power module with the same model.
5. Push the new power supply module into the power bay until you hear a click.
6. If using only one power supply, plug the AC power cord back into the module and power up the server.

Notes

Chapter 5

Rack Installation

5-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimal amount of time.

5-2 Unpacking the System

Inspect the box which the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. The system needs to be placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

5-3 Preparing for Setup

The box the chassis was shipped in should include two sets of rail assemblies and the mounting screws needed for installing the system into the rack. Also included is an optional square hole to round hole converter bracket, for use in racks with round mounting holes. *Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.*

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and similar environments).



Warning!



5-4 Warnings and Precautions

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installations, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure that the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work upwards.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

5-5 Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (TMRA).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

5-6 Rack Mounting Instructions

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. **NOTE:** This rail will fit a rack between 26.5" and 36.4" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of three sections: An inner chassis rail which secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis.

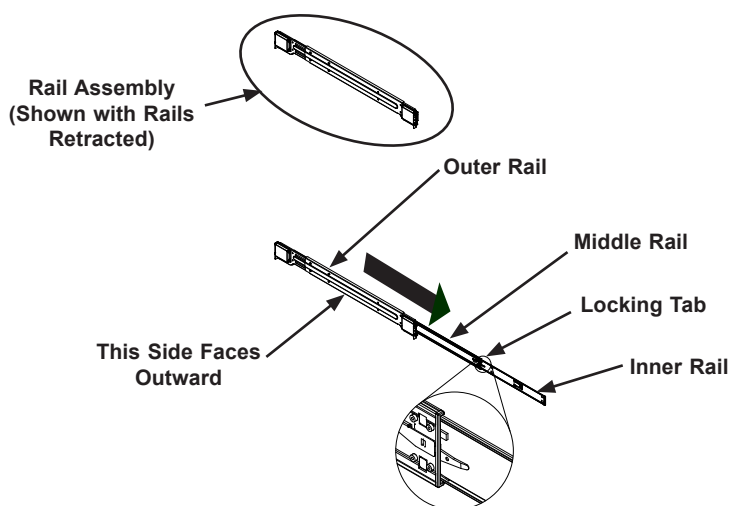


**Figure 5-1: Identifying the Outer Rail, Middle Rail and Inner Rails
(Left Rail Assembly Shown)**

Locking Tabs

Each inner rail has a locking tab. This tab locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack. This prevents the server from coming completely out of the rack when the chassis is pulled out for servicing.

Releasing the Inner Rail

Releasing Inner Rail from the Outer Rails

1. Identify the left and right outer rail assemblies as described on page 5-4.
2. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
3. Press the locking tab down to release the inner rail.
4. Pull the inner rail all the way out.
5. Repeat steps 1-3 for the second outer rail.

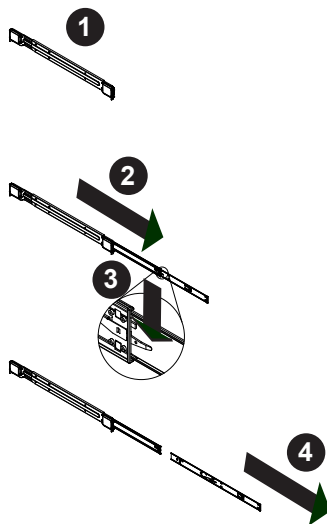


Figure 5-2: Extending and Releasing the Inner Rail

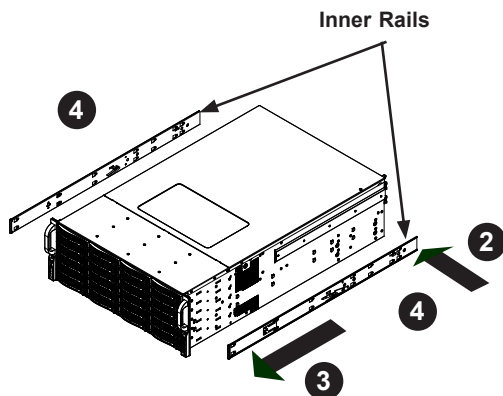


Figure 5-3: Installing the Inner Rails

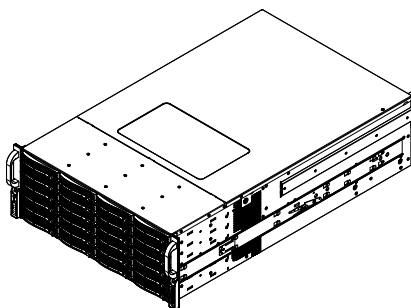


Figure 5-4: Inner Rails Installed on the Chassis

Installing The Inner Rails on the Chassis

Installing the Inner Rails

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the rail clicks into the locked position, which secures the inner rail to the chassis.
4. Secure the inner rail to the chassis with the screws provided.
5. Repeat steps 1 through 4 above for the other inner rail.

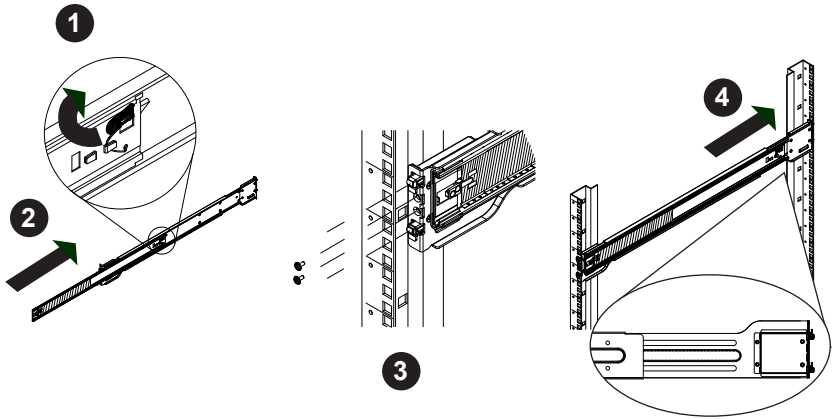


Figure 5-5: Extending and Releasing the Outer Rails

Installing the Outer Rails on the Rack

Installing the Outer Rails

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.
4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.
5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat steps 1-5 for the remaining outer rail.

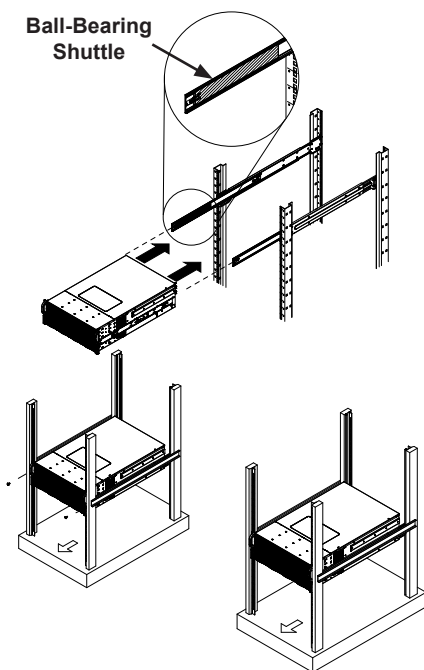


Figure 5-6: Installing into a Rack

Standard Chassis Installation

Installing the Chassis into a Rack

1. Confirm that the inner rails are properly installed on the chassis.
2. Confirm that the outer rails are correctly installed on the rack.
3. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.
4. Align the chassis inner rails with the front of the middle rails.
5. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.
6. Depress the locking tabs of both sides at the same time and push the chassis all the way into the rear of the rack.
7. If necessary for security purposes, use screws to secure the chassis handles to the front of the rack.

Optional Quick Installation Method

The following quick installation method may be used to install the chassis onto a rack.

Installing the Chassis into a Rack

1. Install the whole rail assembly onto the rack as described on page 5-7.
2. Release the inner rail without retracting the middle rail.
3. Install the inner rails on the chassis as previously described on page 5-6.
4. Install the chassis onto the middle rail as described in the previous section.

Adapters for Round and Threaded Hole Racks

The SC847J chassis includes adapter brackets for those customers using round hole racks or racks with threaded holes size M5 or larger.

Installing the Adapter Bracket

1. Place the hooks of the front of the outer rail into the square holes of one of the adapter brackets.
2. Place the hooks of the rear of the outer rail into the square holes of a second adapter bracket.
3. Adjust the length of the outer rail to fit within the rack uprights.
4. Secure the front adapter bracket to the front of the rack using the screws recommended by the rack manufacturer.
5. Secure the rear adapter bracket to the rear of the rack in the same manner.

Appendix A

SC847J Cables and Hardware

A-1 Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: www.supermicro.com.

A-2 Cables Included with SC847J Chassis (SAS/SATA)

SC847J			
Part #	Type	Length	Description
CBL-0088L	Cable	9"	Seven each, 10.5", 4-pin middle fan power extension (PWM)
CBL-0087	Ribbon, Round	20"	16-pin to 16-pin ribbon cable for control panel
CBL-0160L-	Cable	6'	Two each, regional power cords
CBL-0386L	Cable	---	Four parts (two in and two out) EXT - TO-INT iPass connector.
CBL-0217L	Cable		16-pin control panel converter cable

Extending Power Cables

Although Supermicro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	Cable Part #	Length
24-pin	CBL-0042	7.9"(20 CM)
20-pin	CBL-0059	7.9"(20 CM)
8-pin	CBL-0062	7.9"(20 CM)
4-pin	CBL-0060	7.9"(20 CM)

Front Panel to the Motherboard

The SC847J chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	Number of Pins (Motherboard)	Cable Part #
16-pin	16-pin	CBL-0049
16-pin	20-pin	CBL-0048
20-pin	20-pin	CBL-0047
16-pin	various*	CBL-0068
20-pin	various*	CBL-0067

* Split cables: Use these cable if your motherboard requires several different connections from the front panel.

A-4 Chassis Screws

The accessory box includes all the screws needed to set up your chassis. This section lists and describes the most common screws used. Your chassis may not require all the parts listed.

M/B



Pan head
6-32 x 5 mm
[0.197]

HARD DRIVE



Flat head
6-32 x 5 mm
[0.197]

DVD-ROM, CD-ROM, and FLOPPY DRIVE



Pan head
6-32 x 5 mm
[0.197]



Flat head
6-32 x 5 mm
[0.197]



Round head
M3 x 5 mm
[0.197]



Round head
M2.6 x 5 mm
[0.197]

RAIL



Flat head
M4 x 4 mm
[0.157]



Round head
M4 x 4 mm
[0.157]



Flat head
M5 x 12 mm[0.472]
Washer for M5



M/B STANDOFFS



M/B standoff
6-32 to 6-32



M/B (CPU)
standoff
M5 to 6-32



Thumb screw
6-32 x 5 mm
[0.197]



1/U M/B standoff
6-32 x 5 mm
[0.197]

Appendix B

SC847J Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

SC847J	
	1400W
MFR Part #	PWS-1K41P-1R
AC Input	1100W: 100 - 140V, 50 - 60Hz, 9.5 - 13.5 Amp 1400W: 180 - 240V, 50 - 60Hz, 7.0 - 9.5 Amp
DC Output +5V Standby	4 Amp
DC Output +12V	92 Amp @ 100-140V 116 Amp @ 180-240V
With Distributor:	
+5V	30 Amp
+3.3V	24 Amp
-12V	0.6 Amp

Notes

Appendix C

SAS2-846EL Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

C-1 ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the backplane and peripherals back into their antistatic bags when not in use.

C-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.
- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3 An Important Note to Users

All images and layouts shown in this user's guide are based upon the latest PCB Revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

C-4 Introduction to the SAS2-846EL Backplane

The SAS2-846EL backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS2-846EL1 and SAS2-846EL2 PCB Revision 1.10, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

The SAS2-846EL1 backplane includes a primary expander chip and primary SAS connectors. The SAS2-846EL2 includes of both primary and secondary expander chips, as well as primary and secondary SAS connectors. The primary and secondary expanders are redundant, so that if one should fail, the other will take over.

C-5 Front Connectors and Jumpers

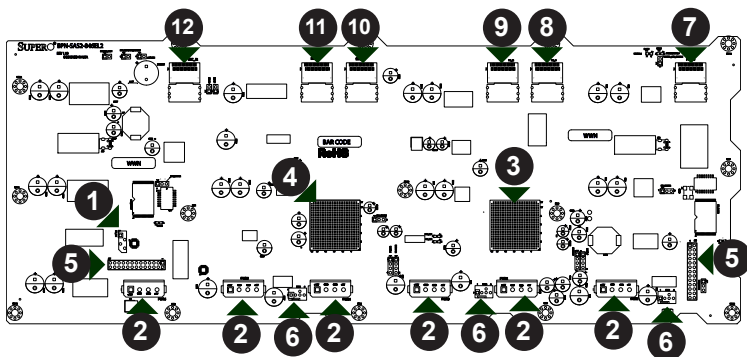


Figure C-1: Front Connectors

Front Connectors

1. Primary I²C connector: PRI_I2C
2. Power connectors: PWR1, PWR2, PWR3, PWR4, PWR5, and PWR6
3. Primary expander chip
4. Secondary expander chip (Not available in EL1 backplane)
5. EPP connectors: J26 and J27
6. Fan connectors: FAN1, FAN2 and FAN3
7. Primary SAS connector: PRI_J0
8. Primary SAS connector: PRI_J1
9. Primary SAS connector: PRI_J2
10. Secondary SAS connector: SEC_J0 (Not available in EL1 backplane)
11. Secondary SAS connector SEC_J1 (Not available in EL1 backplane)
12. Secondary SAS connector SEC_J2 (Not available in EL1 backplane)

C-6 Front Connector and Pin Definitions

1. Primary I²C Connector

The I²C connector is used to monitor the power supply status and to control the fans. See the table on the right for pin definitions.

I ² C Connector Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

2. Backplane Main Power Connectors

The 4-pin connectors, designated PWR1, PWR2, PWR3, PWR4, PWR5, and PWR6, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

3. and 4. Primary and Secondary Expander Chips

This primary and secondary expander chips allow the backplane to support dual ports, cascading, and failover.

5. EPP Ports

The EPP ports are used for manufacturer diagnostic purposes only.

6. Fan Connectors

The 3-pin connectors, designated FAN1, through FAN3, provide power to the fans. See the table on the right for pin definitions.

Fan Connectors	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer

7. - 13. SAS Connectors

The primary and secondary sets of SAS connectors provide expander features including cascading and failover. From right to left the ports are Primary 0, Primary 1 and Secondary 0, Secondary 1. Note that secondary SAS ports are not present on the SAS2-846EL1 backplane.

C-7 Front Jumper Locations and Settings

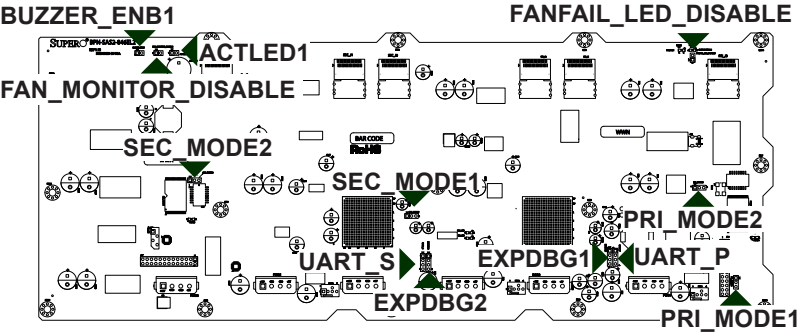
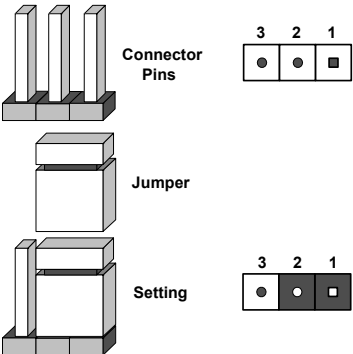


Figure C-2: Front Jumper Locations and Settings

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



General Jumper Settings		
Jumper	Jumper Settings	Note
PRI_MODE1 and 2	Pins 2-3	Factory Setting Do not change
SEC_MODE1 and 2	Pins 2-3	Factory Setting Do not change
EXPDBG1 and 2	No jumper required	Debug, SMC internal use only. (EXPDBG2 not present on SAS2-846EL2)
MDI01 and 02	No jumper required	SMC internal use only
UART_P1	No jumper required	Primary UART connector
UART_S1	No jumper required	Secondary UART connector (Not present on SAS2-847E2)
JP1	No jumper required	Buzzer connector
BUZZER_ENB1	Open: Disabled (Default) Closed: Enabled	Buzzer settings*
ACTLED1	Open: Disabled (Default) Closed: Enabled	Activity LED settings
FAN_MONITOR_DISABLE	Open: Disabled (Default) Closed: Enabled	Fan monitor LED settings

*The buzzer sound indicates that a condition requiring immediate attention has occurred.

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure
2. Fan failure
3. System temperature over 45° Celsius.

Front LEDs		
LED	State	Specification
FANFAIL1	On	Failure in fans
OVERHEATFAIL1	On	Overheat/Drive Failure LED Indicator (Red light: flashing, buzzer: on)

C-8 Rear Connectors and LED Indicators

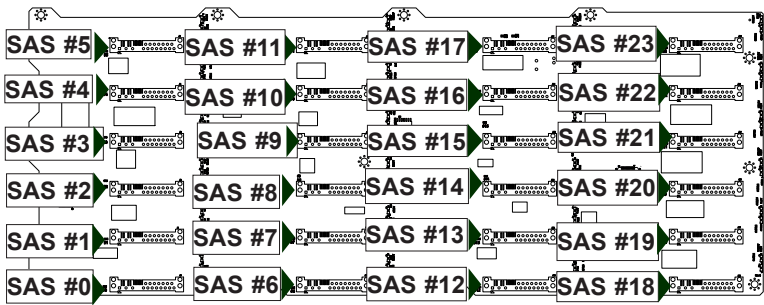


Figure C-3: Rear Connectors

Rear SAS/SATA Connectors			
Rear Connector	SAS Drive Number	Rear Connector	SAS Drive Number
SAS #0	SAS/SATA HDD #0	SAS #12	SAS/SATA HDD #12
SAS #1	SAS/SATA HDD #1	SAS #13	SAS/SATA HDD #13
SAS #2	SAS/SATA HDD #2	SAS #14	SAS/SATA HDD #14
SAS #3	SAS/SATA HDD #3	SAS #15	SAS/SATA HDD #15
SAS #4	SAS/SATA HDD #4	SAS #16	SAS/SATA HDD #16
SAS #5	SAS/SATA HDD #5	SAS #17	SAS/SATA HDD #17
SAS #6	SAS/SATA HDD #6	SAS #18	SAS/SATA HDD #18
SAS #7	SAS/SATA HDD #7	SAS #19	SAS/SATA HDD #19
SAS #8	SAS/SATA HDD #8	SAS #20	SAS/SATA HDD #20
SAS #9	SAS/SATA HDD #9	SAS #21	SAS/SATA HDD #21
SAS #10	SAS/SATA HDD #10	SAS #22	SAS/SATA HDD #22
SAS #11	SAS/SATA HDD #11	SAS #23	SAS/SATA HDD #23

Rear LED Indicators		
Rear Connector	Hard Drive Activity LED	Failure LED
SAS #0	ACT #0	FAIL #0
SAS #1	ACT #1	FAIL #1
SAS #2	ACT #2	FAIL #2
SAS #3	ACT #3	FAIL #3
SAS #4	ACT #4	FAIL #4
SAS #5	ACT #5	FAIL #5
SAS #6	ACT #6	FAIL #6
SAS #7	ACT #7	FAIL #7
SAS #8	ACT #8	FAIL #8
SAS #9	ACT #9	FAIL #9
SAS #10	ACT #10	FAIL #10
SAS #11	ACT #11	FAIL #11
SAS #12	ACT #12	FAIL #12
SAS #13	ACT #13	FAIL #13
SAS #14	ACT #14	FAIL #14
SAS #15	ACT #15	FAIL #15
SAS #16	ACT #16	FAIL #16
SAS #17	ACT #17	FAIL #17
SAS #18	ACT #18	FAIL #18
SAS #19	ACT #19	FAIL #19
SAS #20	ACT #20	FAIL #20
SAS #21	ACT #21	FAIL #21
SAS #22	ACT #22	FAIL #22
SAS #23	ACT #23	FAIL #23

Notes

C-9 Dual Port and Cascading Configurations

Single Ports

SAS2-846EL1 backplanes have a single-port expander that accesses all hard drives and supports cascading.

Dual Ports

SAS2-846EL2 backplanes have dual-port expanders that access all the hard drives. These dual-port expanders support cascading, failover, and multipath.

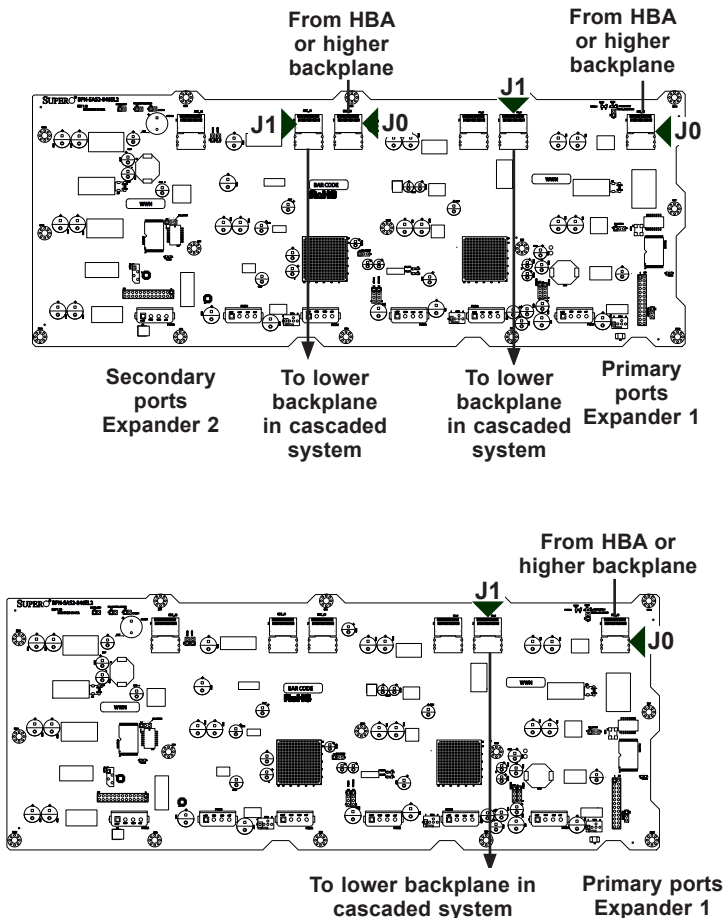


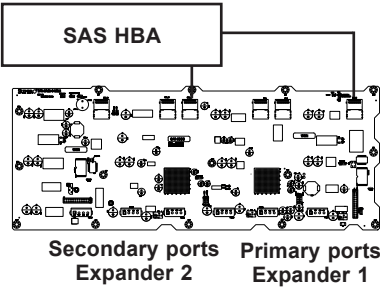
Figure C-4: Dual Port Cascading Configurations

C-10 Failover

The SAS2-846EL2 backplane has two expanders which allow effective failover.

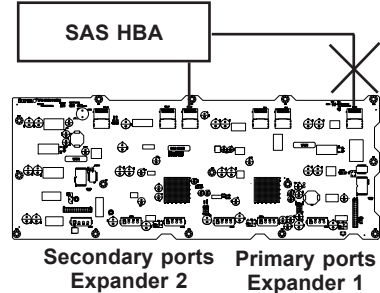
Single Host Bus Adapter

In a single host bus configuration, the backplane connects to one Host Bus Adapter (HBA).



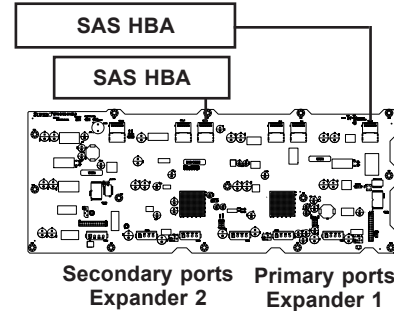
Single Host Bus Adapter Failover

If the expander or data path in the primary ports fails, the system automatically switches to secondary ports.



Dual Host Bus Adapter

In a dual host bus configuration, the backplane connects to two host bus adapters.



Dual Host Bus Adapter Failover

If the expander or data path in the primary ports fails, the system automatically switches to the secondary ports. This maintains a full connection to all drives.

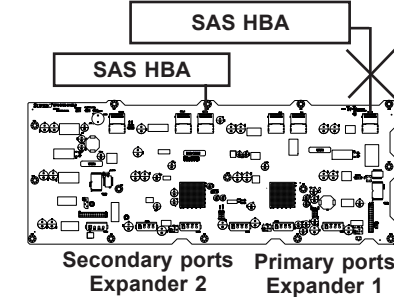


Figure C-5: Failover Configurations

Connecting an Internal Host Bus Adapter to the Backplane

The following section lists the most common cables used to connect the host bus adapter to the backplane.

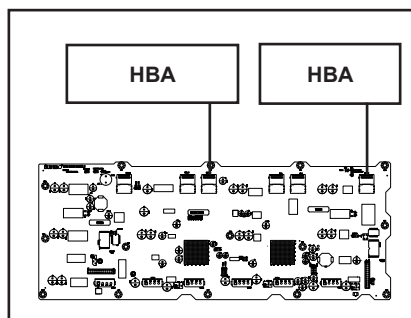
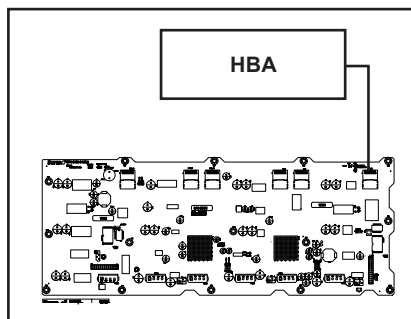


Figure C-7: Connecting an Internal HBA to the Backplane

Supported Internal HBA Cables

Use the following listed cables to create connections between the internal HBA and SAS2-846EL backplane. The cables required depend on the HBA connector.

Cable Name: iPass TO 4-lane

Part #: CBL-0117L

Length: 46 cm (18 inches)

Description: This cable has one SFF-8484 (32-pin) connector on one end and iPass (SFF-8087/Mini-SAS) connector (36 pins) at the other. This cable connects from the HBA to the SAS2-846EL backplane.

Cable Name: iPass (Mini-SAS) to iPass (Mini-SAS)

Part #: CBL-0108L-02

Length: 39 cm (15 inches)

Part #: CBL-0109L-02

Length: 22 cm (9 inches)

Part #: CBL-0110L-02

Length: 18 cm (7 inches)

Description: This cable has an iPass (SFF-8087/Mini-SAS) connector (36 pins) at each end. It connects from the HBA to the SAS2-846EL backplane.

Supported External HBA to Backplane Cable

Use the following cable if your external HBA has an InfiniBand connector.



Figure C-8: The CBL-0200L Cable

Cable Name: SAS InfiniBand to Mini SAS X4 1M cable, PBF

Part #: CBL-0200L

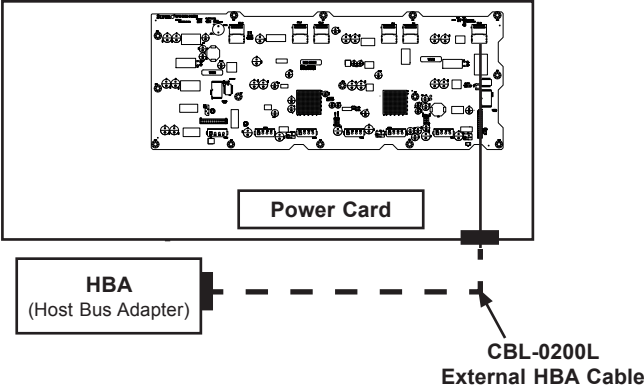
Length: 1 meter

Description: This cable has an InfiniBand connector (SFF-8470) on one end and an SFF-8088-1X (26-pins) at the other end.

Connecting an External Host Bus Adapter to the Backplane

This backplane supports external Host Bus Adapters. In this configuration, the HBA and the backplane are in different physical chassis. This allows a JBOD configuration system to connect to the other system that has a HBA.

Single External Host Bus Adapter



Dual External Host Bus Adapter

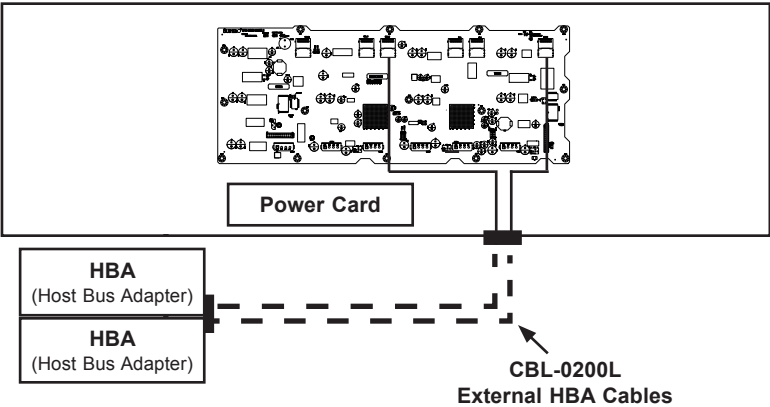


Figure C-9: Connecting Single and Dual HBAs to the Backplane

Supported External HBA to Backplane Cable

Use the following cable if your external HBA has an InfiniBand connector.



Figure C-10: External Cable (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)

Ports: Single or Dual

Placement: External cable

Description: External cascading cable. Connects ports between servers. With most connectors, use one cable for single port connections and two cables for dual port connections.

Connecting Multiple Backplanes in a Single Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-0167L internal cables and CBL-0166L external cables.

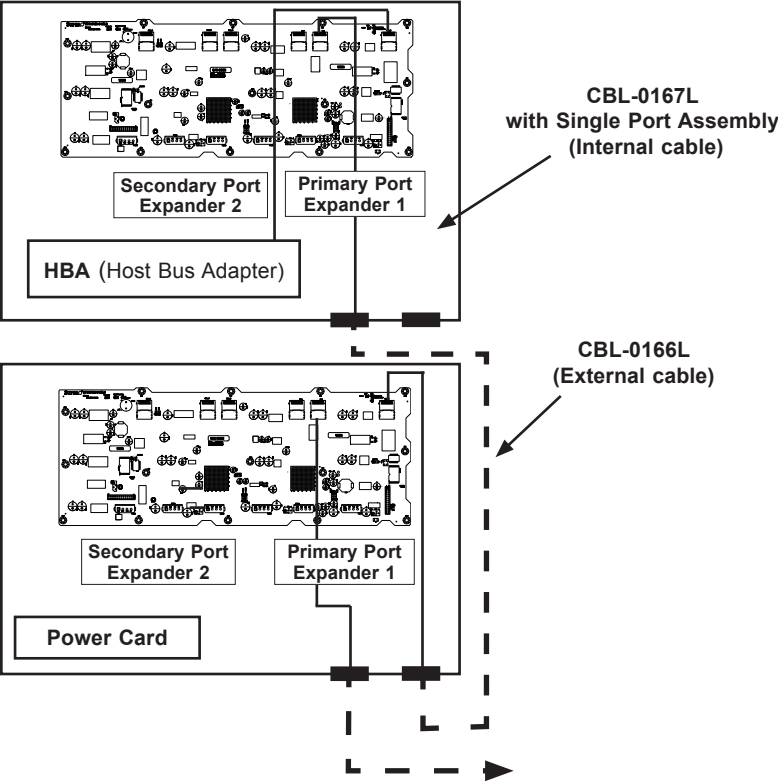


Figure C-11: Single HBA Configuration

Single HBA Configuration Cables

Single Port Cable Assembly

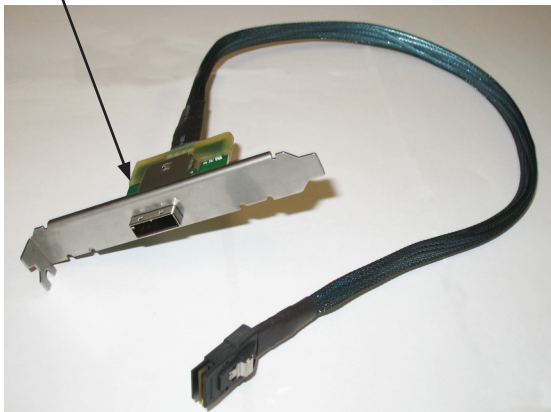


Figure C-12: Single Port Internal Cable (CBL-0167L)

Cable Name: SAS EL2/EL1 Backplane Cable (Internal) with 2-port Cascading Cable, 68 cm

Part #: CBL-0167L (SFF-8087 to SFF-8088 x1)

Ports: Single

Placement: Internal cable

Description: Internal cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in single port environments.



Figure C-13: External Cable (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)

Ports: Single or Dual

Placement: External cable

Description: External cascading cable. Connects ports between servers. With most connectors, use one cable for single port connections and two cables for dual port connections.

Connecting Multiple Backplanes in a Dual Channel Environment

This section describes the cables used when cascading from dual HBAs. These connections use CBL-0168L internal cables and CBL-0166L external cables.

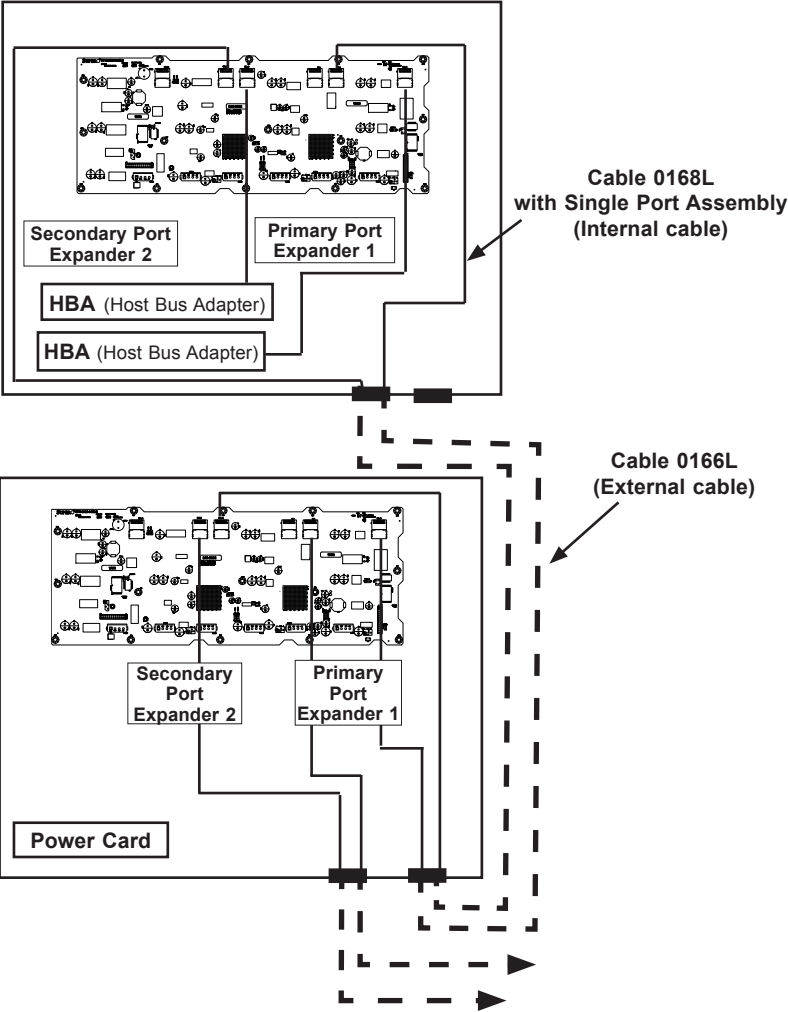


Figure C-14: Multiple Backplanes in a Dual Channel Environment

Dual HBA Configuration Cables

Dual Port Cable
Assembly



Figure C-15: Dual Port Internal Cable (CBL-0168L)

Cable Name: SAS Dual-port Cable Assembly, 68/76cm

Part #: CBL-0168L

Placement: Internal cable

Ports: Dual

Description: Internal cascading cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in dual port environments.

C-12 Supported Cascading Configurations

Cascading allows the system to access data at a faster rate by allowing several backplanes to share resources to reduce latency time.

The first backplane in a cascaded system requires a motherboard and an HBA. Other servers require a power control card with no motherboard and no HBA. For more information, see the SC846 Chassis Manual available at www.supermicro.com.

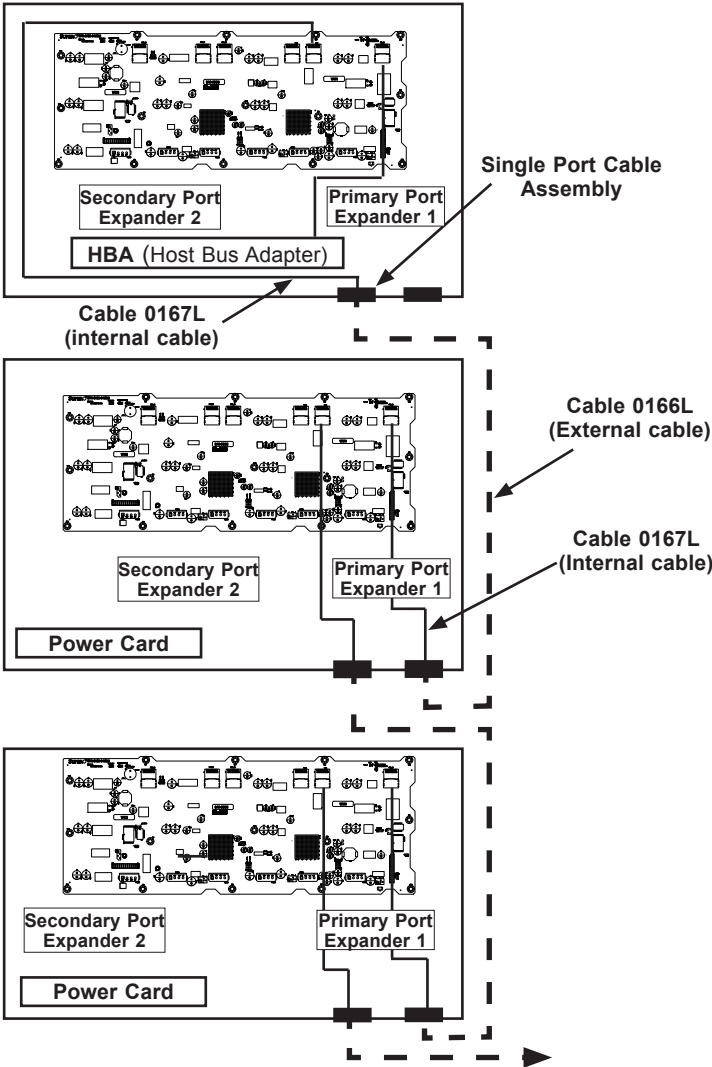


Figure C-16: Simple Cascaded Configurations

Dual SAS HBA and Cascaded Configuration

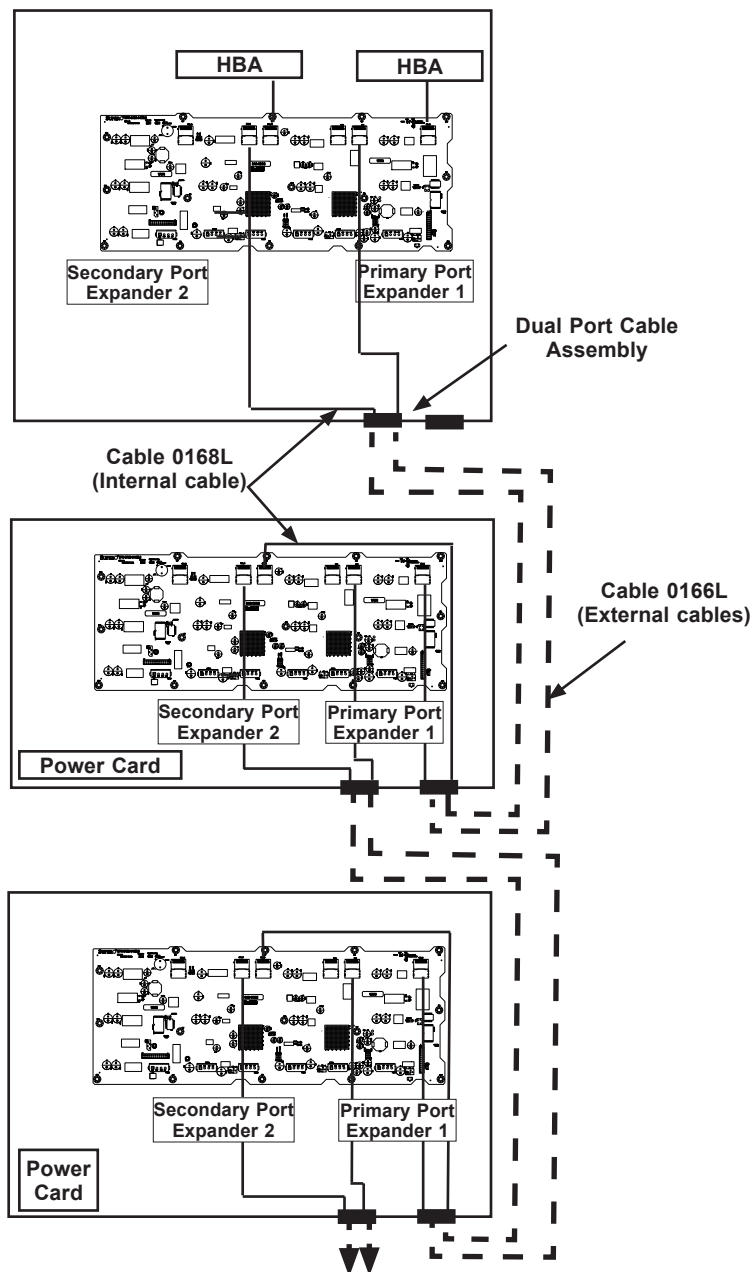


Figure C-17: Dual SAS HBA with Cascaded Configuration

Notes

Appendix D

SAS2-847EL Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

D-1 ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the backplane and peripherals back into their antistatic bags when not in use.

D-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.
- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

D-3 An Important Note to Users

All images and layouts shown in this user's guide are based upon the latest PCB revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

D-4 Introduction to the SAS2-847EL Backplane

The SAS2-847EL backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS2-847EL1 and SAS2-847EL2 Revision 1.01, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

The SAS2-847EL1 backplane includes a primary expander chip and primary SAS connectors. The SAS2-847EL2 includes of both primary and secondary expander chips, as well as primary and secondary SAS connectors. The primary and secondary expanders are redundant, so that if one should fail, the other will take over.

D-5 Connectors, Jumpers and LEDs

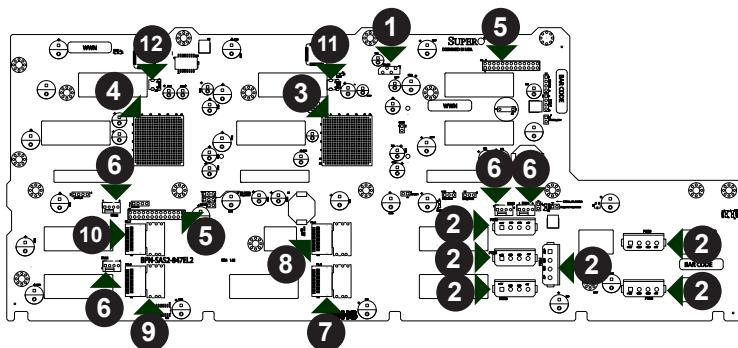


Figure D-1: Front Connectors

Front Connectors

1. Primary I²C connector: PRI_I2C1
2. Power connectors: PWR1, PWR2, PWR3, PWR4, PWR5, and PWR6
3. Primary expander chip
4. Secondary expander chip (Not available in EL1 backplane)
5. EPP connectors: J21 and J24
6. Fan connectors: FAN1, FAN2, FAN3 and FAN4
7. Primary SAS port: PRI_J0
8. Primary SAS port: PRI_J1
9. Secondary SAS port: SEC_J0 (Not available in EL1 backplane)
10. Secondary SAS port SEC_J1 (Not available in EL1 backplane)
11. Primary Ethernet port: J22
12. Secondary Ethernet port: J23

D-6 Front Connector and Pin Definitions

1. Primary I²C Connector

The I²C connector is used to monitor the power supply status and to control the fans. See the table on the right for pin definitions.

I ² C Connector Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

2. Backplane Main Power Connectors

The 4-pin connectors, designated PWR1, PWR2, PWR3, PWR4, PWR5, and PWR6, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

3. and 4. Primary and Secondary Expander Chips

This primary and secondary expander chips allow the backplane to support dual ports, cascading, and failover.

5. EPP Ports

The EPP ports are used for manufacturer's diagnostic purposes only.

6. Fan Connectors

The 4-pin connectors, designated FAN1, through FAN4, provide power to the fans. See the table on the right for pin definitions.

Fan Connectors	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	Empty

7. - 10. SAS Ports

The primary and secondary sets of SAS ports provide expander features including cascading and failover. From right to left the ports are Primary 0, Primary 1 and Secondary 0, Secondary 1. Note that secondary SAS ports are not present on the SAS2-847EL1 backplane.

D-7 Front Jumper Locations and Pin Definitions

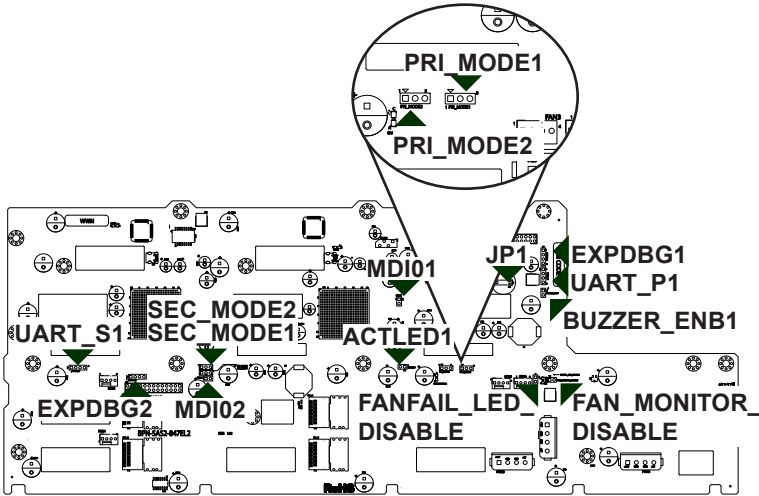
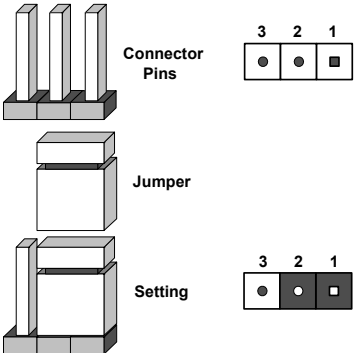


Figure D-2: Front Jumper Locations and Pin Definitions

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



General Jumper Settings		
Jumper	Jumper Settings	Note
PRI_MODE1 and 2	Pins 2-3	Factory Setting Do not change
SEC_MODE1 and 2	Pins 2-3	Factory Setting Do not change
MDI01 and 02	No jumper required	SMC internal use only
UART_P1	No jumper required	Primary UART connector
UART_S1	No jumper required	Secondary UART connector (Not present on SAS2-847E2)
JP1	No jumper required	Buzzer connector
BUZZER_ENB1	Open: Disable Closed: Enable	Buzzer enable*
ACTLED1	Open: Disable Closed: Enable	For manufacturing use only
FAN_MONITOR_DISABLE	Open: Enable Closed: Disable	Fan monitor settings
FANFAIL_LED_DISABLE	Open: Enable Closed: Disable	Disables the fan failure LED
EXPDBG1	N/A	For manufacturing use only.
EXPDBG2	N/A	For manufacturing use only.

*The buzzer sound indicates that a condition requiring immediate attention has occurred.

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure
2. Fan failure
3. System temperature over 45° Celsius.

D-8 Front LED Indicators

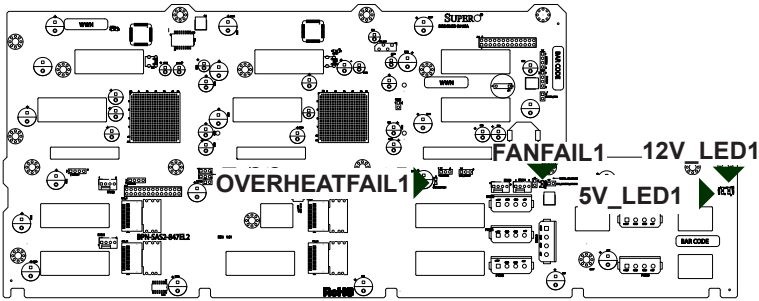


Figure D-3: Front LED Indicators

Front LEDs		
LED	Default State	Specification
5V_LED1	On	Blue LED indicates a backplane power failure. Light is on during normal operation
12V_LED2	On	Blue LED indicates a backplane power failure. Light is on during normal operation.
OVERHEATFAIL1	Off	Red LED indicates an overheated condition. Light is off during normal operation
FANFAIL1	Off	Red LED indicates a fan failure. Light is off during normal operation

D-9 Rear Connectors and LED Indicators

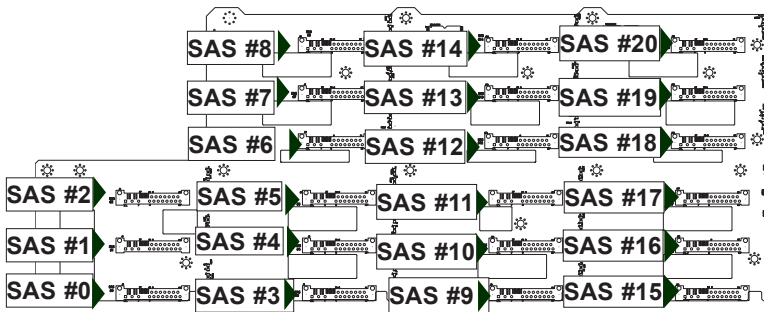


Figure D-4: Rear Connectors

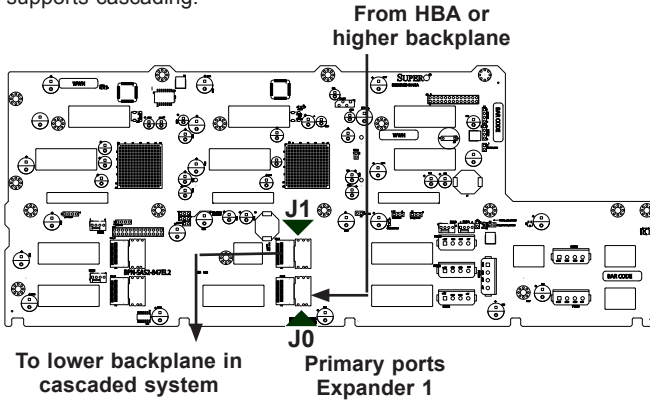
Rear SAS/SATA Connectors			
Rear Connector	SAS Drive Number	Rear Connector	SAS Drive Number
SAS #0	SAS/SATA HDD #0	SAS #11	SAS/SATA HDD #11
SAS #1	SAS/SATA HDD #1	SAS #12	SAS/SATA HDD #12
SAS #2	SAS/SATA HDD #2	SAS #13	SAS/SATA HDD #13
SAS #3	SAS/SATA HDD #3	SAS #14	SAS/SATA HDD #14
SAS #4	SAS/SATA HDD #4	SAS #15	SAS/SATA HDD #15
SAS #5	SAS/SATA HDD #5	SAS #16	SAS/SATA HDD #16
SAS #6	SAS/SATA HDD #6	SAS #17	SAS/SATA HDD #17
SAS #7	SAS/SATA HDD #7	SAS #18	SAS/SATA HDD #18
SAS #8	SAS/SATA HDD #8	SAS #19	SAS/SATA HDD #19
SAS #9	SAS/SATA HDD #9	SAS #20	SAS/SATA HDD #20
SAS #10	SAS/SATA HDD #10		

Rear LED Indicators		
Rear Connector	Hard Drive Activity LED	Failure LED
SAS #0	ACT #0	FAIL #0
SAS #1	ACT #1	FAIL #1
SAS #2	ACT #2	FAIL #2
SAS #3	ACT #3	FAIL #3
SAS #4	ACT #4	FAIL #4
SAS #5	ACT #5	FAIL #5
SAS #6	ACT #6	FAIL #6
SAS #7	ACT #7	FAIL #7
SAS #8	ACT #8	FAIL #8
SAS #9	ACT #9	FAIL #9
SAS #10	ACT #10	FAIL #10
SAS #11	ACT #11	FAIL #11
SAS #12	ACT #12	FAIL #12
SAS #13	ACT #13	FAIL #13
SAS #14	ACT #14	FAIL #14
SAS #15	ACT #15	FAIL #15
SAS #16	ACT #16	FAIL #16
SAS #17	ACT #17	FAIL #17
SAS #18	ACT #18	FAIL #18
SAS #19	ACT #19	FAIL #19
SAS #20	ACT #20	FAIL #20

D-10 Cascading Configurations

Single Ports

SAS2-847EL1 backplanes have a single-port expander that access all hard drives and supports cascading.



Dual Ports

SAS2-847EL2 backplanes have dual-port expanders that access all the hard drives. These dual-port expanders support cascading, failover, and multipath.

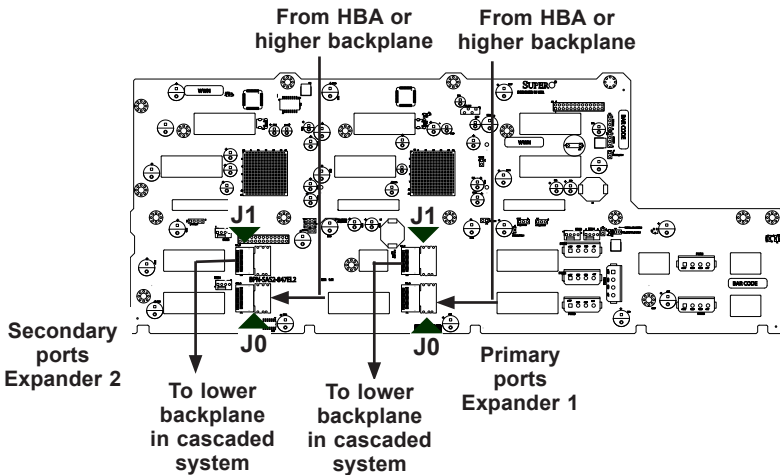


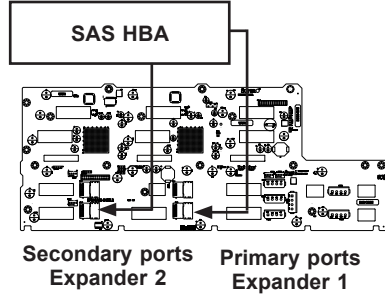
Figure D-5: Single and Dual Port Cascading Configurations

D-11 Failover

The SAS2-847EL2 backplane has two expanders which allow effective failover.

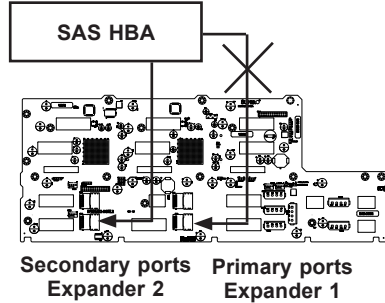
Single Host Bus Adapter

In a single host bus configuration, the backplane connects to one Host Bus Adapter (HBA).



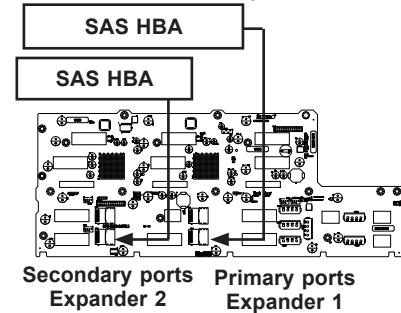
Single Host Bus Adapter Failover

If the expander or data path in the primary ports fails, the system automatically switches to the secondary ports.



Dual Host Bus Adapter

In a Dual Host Bus Configuration, the backplane connects to two Host Bus Adapters.



Dual Host Bus Adapter Failover

If the expander or data path in the primary ports fails, the system automatically switches to the secondary ports. This maintains a full connection to all drives. Note that this configuration requires additional MPIO software. Contact your Supermicro authorized representative for details.

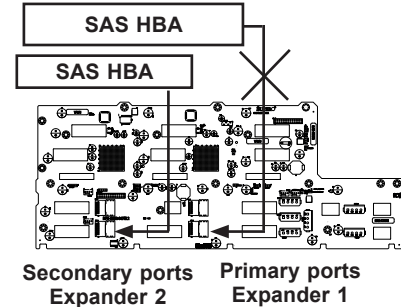


Figure D-6: Failover Configurations

D-12 Chassis Power Card and Support Cables

Chassis Power Card

In a cascaded configuration, the first chassis includes a motherboard and at least one Host Bus Adapter (HBA). Other servers in this enclosed system, include a power card. This section describes the supported power card for the SAS-847EL1/EL2 backplane.

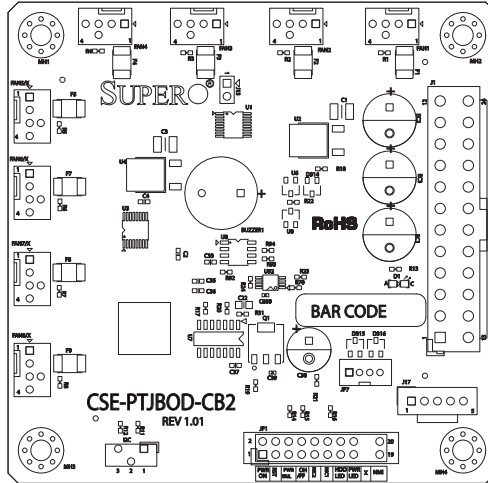


Figure D-7: Chassis Power Card (Sold Separately)

Power Card		
Part Number	Part Type	Where Used
CSE-PTJBOD-CB2	Power card	Allows the chassis to be in a JBOD (Just a Bunch of Drives) system.

Connecting an Internal Host Bus Adapter to the Backplane

The following section lists the most common cables used to connect the HBA to the backplane.

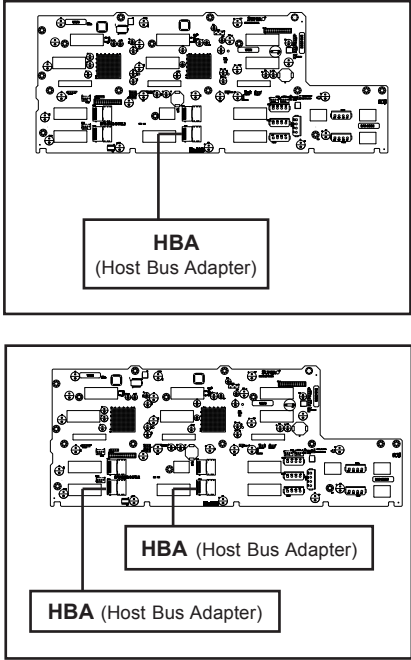


Figure D-8: Connecting an Internal HBA to the Backplane

Supported Internal HBA Cables

Use the following listed cables to create connections between the internal HBA and SAS2-847EL backplane. The cables required depend on the HBA connector.

Cable Name: iPass TO 4-lane

Part #: CBL-0117L

Length: 46cm (18 inches)

Description: This cable has one SFF-8484 (32 pin) connector on one end and iPass (SFF-8087/mini-sas) connector (36 pins) at the other. This cable connects from the HBA to the SAS2-847EL backplane.

Cable Name: iPass (mini SAS) to iPass (mini SAS)

Part #: CBL-0108L-02

Length: 39 cm (15 inches)

Part #: CBL-0109L-02

Length: 22 cm (9 inches)

Part #: CBL-0110L-02

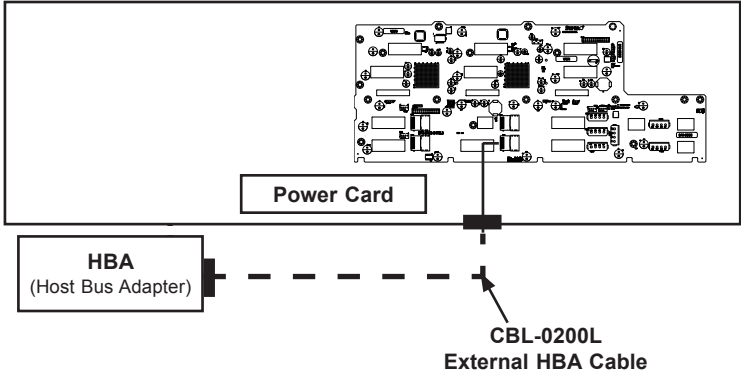
Length: 18 cm (7 inches)

Description: This cable has an iPass (SFF-8087/mini-sas) connector (36 pins) at each end. It connects from the HBA to the SAS2-847EL backplane.

Connecting an External Host Bus Adapter to the Backplane

This backplane supports external Host Bus Adapters. In this configuration, the HBA and the backplane are in different physical chassis. This allows a JBOD configuration system to connect to the other system that has a HBA.

Single External Host Bus Adapter



Dual External Host Bus Adapter

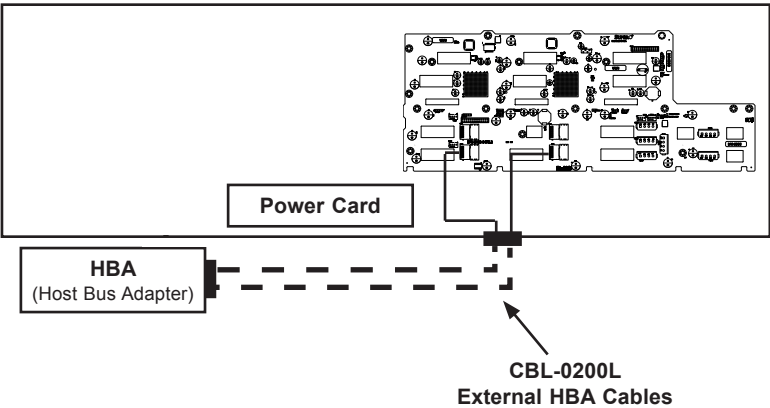


Figure D-9: Connecting Single and Dual HBAs to the Backplane

Supported External HBA to Backplane Cable

Use the following cable if your external HBA has an InfiniBand connector.



Figure D-10: External Cable (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)

Ports: Single or Dual

Placement: External cable

Description: External cascading cable. Connects ports between servers. With most connectors, use one cable for single port connections and two cables for dual port connections.

Connecting Multiple Backplanes in a Single Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-0167L internal cables and CBL-0166L external cables.

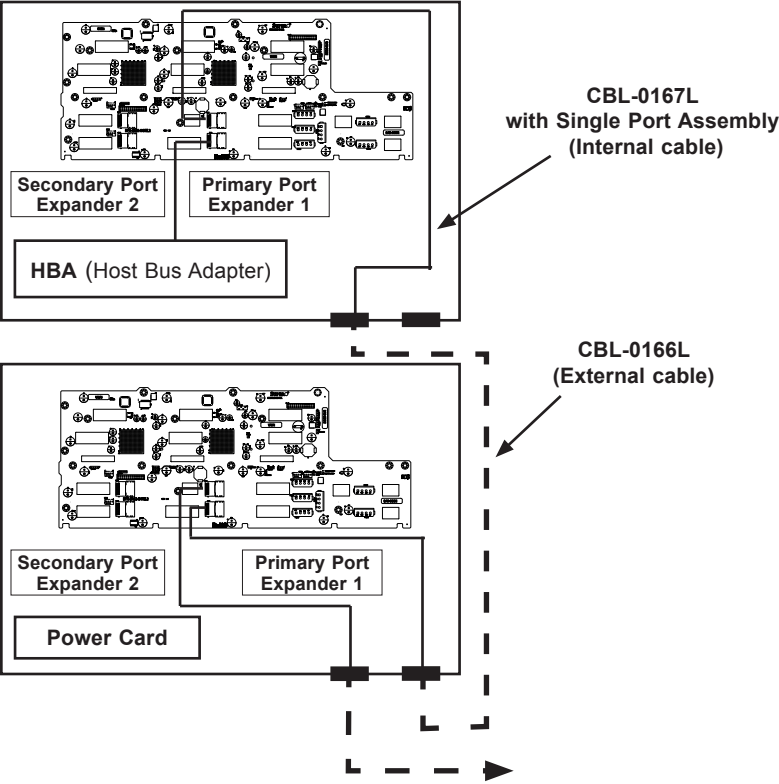


Figure D-11: Single HBA Configuration

Single HBA Configuration Cables

Single Port Cable Assembly

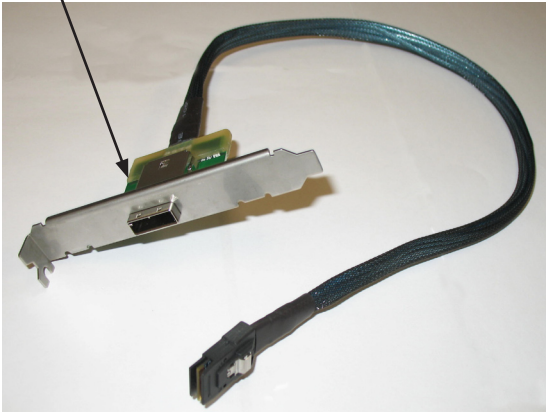


Figure D-12: Single Port Internal Cable (CBL-0167L)

Cable Name: SAS EL2/EL1 Backplane Cable (Internal) with 2-port Cascading Cable, 68cm

Part #: CBL-0167L (SFF-8087 to SFF-8088 x1)

Ports: Single

Placement: Internal cable

Description: Internal cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in single port environments.



Figure D-13: External Cable (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)

Ports: Single or Dual

Placement: External cable

Description: External cascading cable. Connects ports between servers. With most connectors, use one cable for single port connections and two cables for dual port connections.

Connecting Multiple Backplanes in a Dual Channel Environment

This section describes the cables used when cascading from dual HBAs. These connections use CBL-0168L internal cables and CBL-0166L external cables.

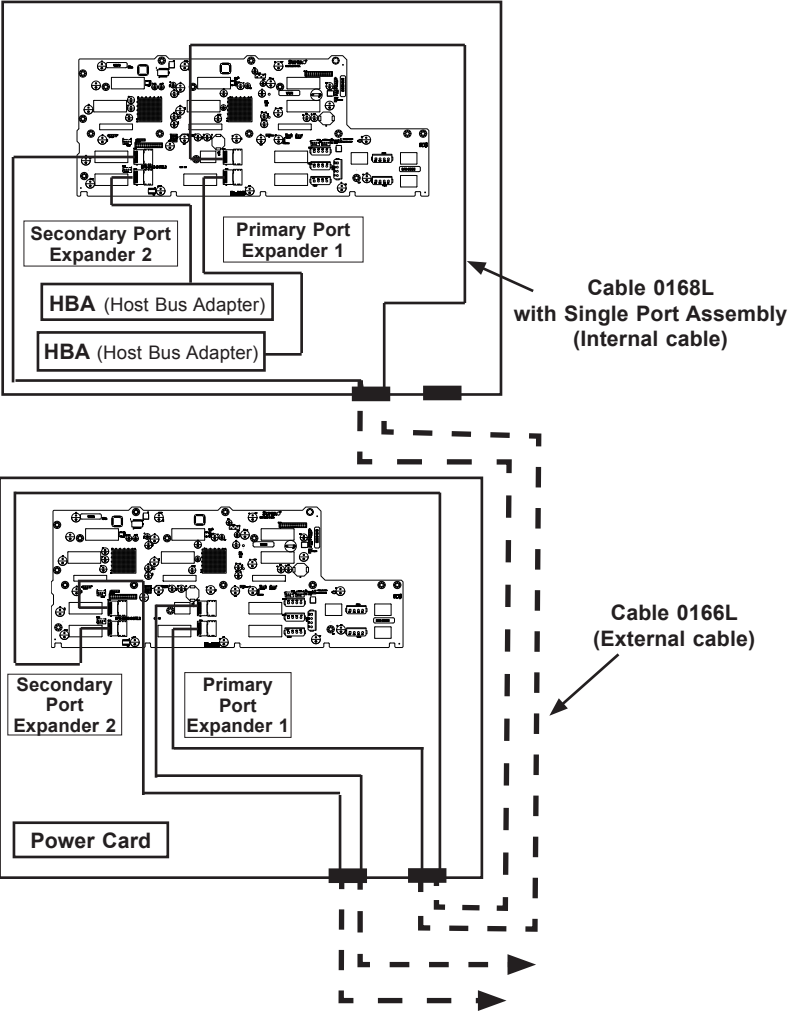


Figure D-14: Multiple Backplanes in a Dual Channel Environment

Dual HBA Configuration Cables

Dual Port Cable
Assembly



Figure D-15: Dual Port Internal Cable (CBL-0168L)

Cable Name: SAS Dual-port Cable Assembly, 68/76cm

Part #: CBL-0168L

Placement: Internal cable

Ports: Dual

Description: Internal cascading cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in dual port environments.



Figure D-16: External Cable (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L

Placement: External cable

Ports: Single or Dual

Description: External cascading cable. Connects ports between servers. Use one cable for single port connections and two cables for dual port connections.

D-13 Supported Cascading Configurations

Cascading allows the system to access data at a faster rate by allowing several backplanes to share resources to reduce latency time.

The first backplane in a cascaded system requires a motherboard and HBA. Other servers require a power control card with no motherboard and no HBA. For more information, see the SC846 Chassis Manual available at www.supermicro.com.

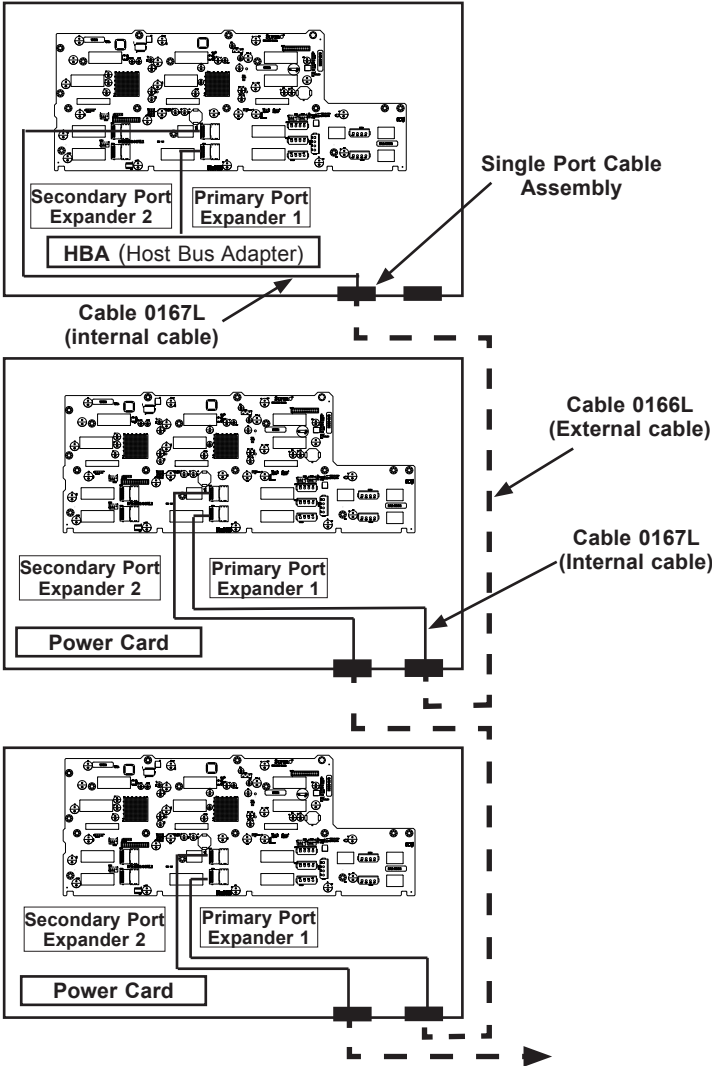


Figure D-17: Simple Cascaded Configurations

Dual SAS HBA and Cascaded Configuration

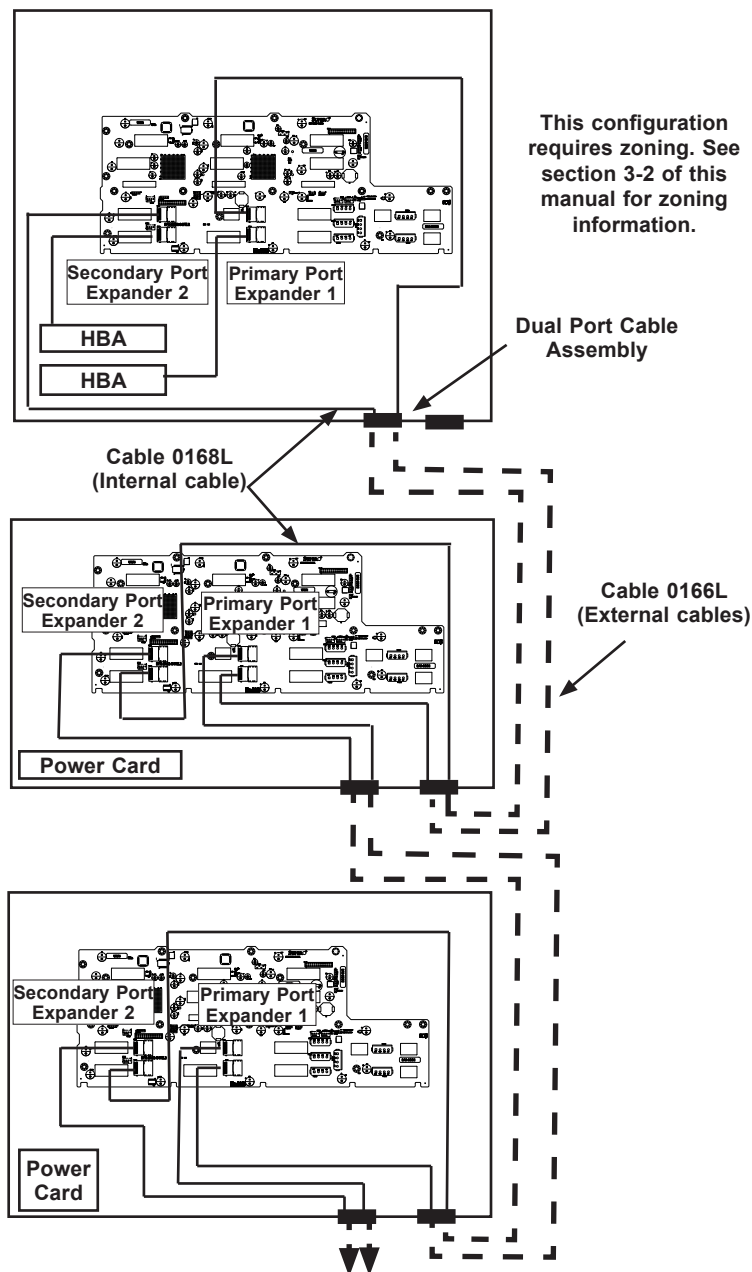


Figure D-18: Dual SAS HBA with Cascaded Configuration

Notes

Appendix E

SC847J Chassis Internals and Externals

E-1 Overview

This appendix describes backplane and cabling information specific to the SC847J chassis.

E-2 Revisions to the Data in this Appendix

Content Revision History		
Date	Revision	Changes
2/5/10	1.0	Initial revision
2/19/10	1.01	Content added
6/21/10	N/A	Format and text revised to conform to chassis manual standards

E-3 SC847J E16 Series SAS2 JBOD Chassis

Each SC847J E16 series SAS2 JBOD chassis contains two SAS2 expander backplanes, forty-five 3.5" drives (SAS or SATA) and a PTJBOD card. The PTJBOD card drives the chassis LEDs and fans. See the CSE-PTJBOD-CB2 section below for details. The content of this appendix will focus on how this chassis can be configured both internally and externally.

There are two SAS-2 expander backplanes that are used in SC847J E16 series. SAS2-846EL1/EL2 and SAS2-826EL1/EL2. More detail on these two backplanes and how you can internally connect them will be discussed in section A-4 and in the backplane appendices of this manual. For external connectivity please see section A-5.

It's also very important to follow Supermicro's Expander/HDD Compatibility list which is published on Supermicro's Web site. All the components in the compatibility list have been qualified and are recommended by Supermicro. Although components outside of the compatibility list might work, they will not be supported by Supermicro. See <http://www.supermicro.com/products/info/files/storage/SAS-1-CompList.pdf> for the latest list. This document will focus on the single expander version.

CSE-PTJBOD-CB2

This simple card is used drives the fan and power supply in the SC847J chassis.

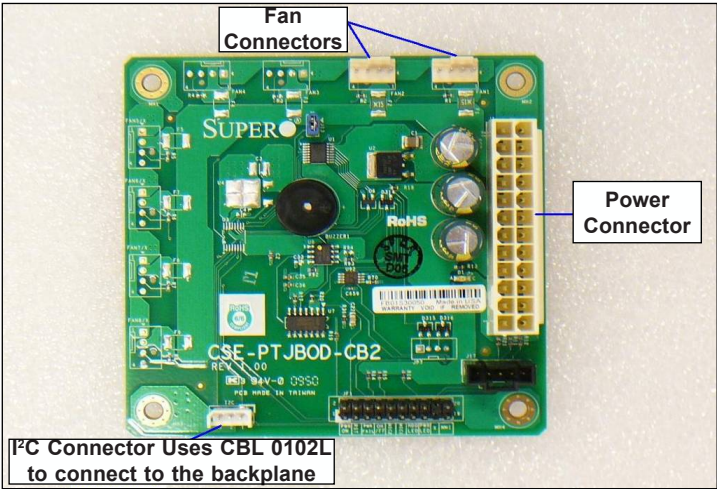


Figure E-1: CSE-PTJBOD-CB2

SAS2-846EL1/EL2

SAS2-846EL1 is one of the two expander backplanes which may be used in the SC847J chassis. This backplane supports twenty-four 3.5" SAS/SATA drives and operates at a theoretical SAS2 performance of 6Gbps per phy. It supports enclosure elements such as fan RPM, temperature and power through the SES-II interface. It has three SFF 8087 connectors identified as J0, J1 and J2. The J0 connector is used for connecting to an expander from a host. J1 (auxiliary) is used in case J0 fails or it may also be used for zoning. J2 is used to cascade to the next expander backplane downstream.

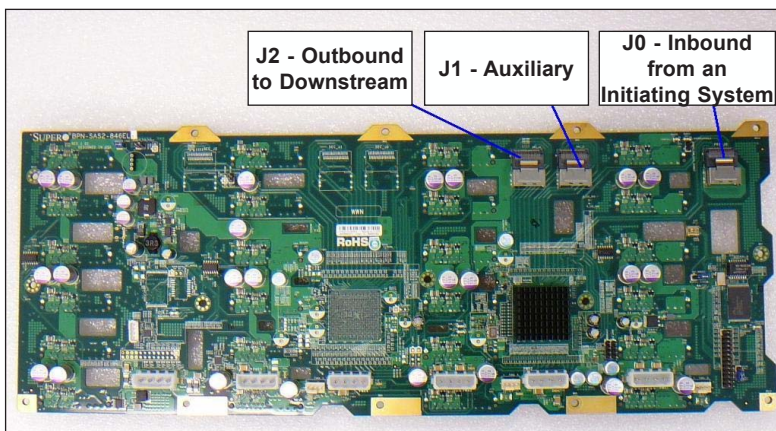


Figure E-2: SAS2-846EL1

There is also dual version of the same expander which has two expander chips, therefore it is necessary to have two paths to each drive behind the expander. It is mandatory to use SAS drives when using dual expander backplanes. This is because the SAS drives have dual connectivity, therefore enabling the redundancy feature. No SATA drives should be used in dual expander backplanes.

SAS2-847EL1/EL2

SAS2-847EL1/EL2 is one of the two expander backplanes which may be used in this chassis. This backplane supports twenty-one 3.5" SAS/SATA drives and operates at a theoretical SAS2 performance of 6Gbps per phy. It supports enclosure elements such as fan RPM, temperature and power through the SES-II interface. It has two SFF 8087 connectors. The J0 connector is used to connect to the expander to a host and J1 is used to cascade to the next expander backplane.

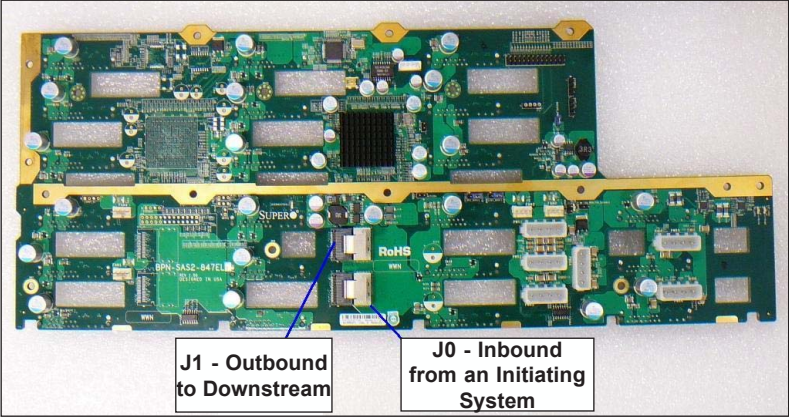


Figure E-3: SAS2-847EL1

There is also dual version of the same expander which has two expander chips so there are two paths to each drive behind the expander. It is mandatory to use SAS drives when using the dual expander backplane. This is because the SAS drives have dual connectivity, therefore enabling the redundancy feature. No SATA drives should be used in dual expander backplanes.

Internal Cable

A special cable has been designed by Supermicro to connect the two backplanes mentioned above to the side of the chassis.

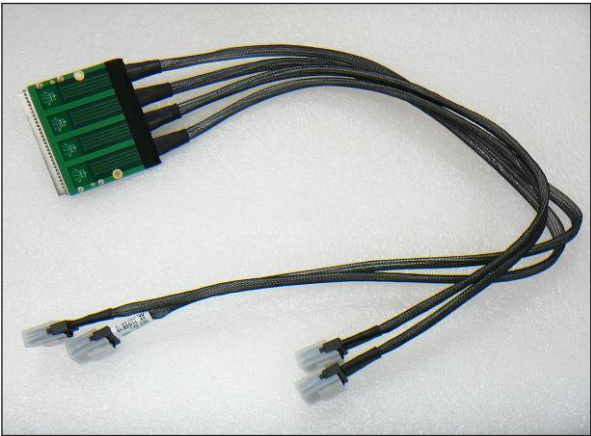


Figure E-4: Special Connector Cable Board for use with SC847-E16

This special connector combines four SFF 8087 cables into one simple connector board which is installed on the side of the chassis to be connected to the external systems.



Figure E-5: Up-Close of the Special Connector Cable Board

In the illustration above, the SFF 8087 end of one of the cables and the 4x SFF 8088 are shown. The SFF 8087 end connects to the backplanes that are inside the chassis, as well as the 4x SFF 8088 which would be mounted on the side of the chassis and is to be connected to either a downstream JBOD or an upstream HBA/RAID.

SC847J Chassis Internal Connectivity

Each backplane is connected separately to the outside world. To configure this, you need to connect the J0 connector of both BPN-SAS2-847EL1 and BPN-SAS2-846-EL1 backplanes to cables in section 1.4. The other two cables are connected to J1 of BPN-SAS2-847EL1 and J2 of BPN-SAS2-847EL1 to make the chassis cascade ready for future. The other side of the cables is a simple cable card which is then mounted on the side of the JBOD chassis to the outside world. You are now ready to be cascaded from a host or any external host/server system (i.e. head unit) or cascade to another downstream JBOD. See more about external host/server connectivity in section 3.

Below please see block diagram of how the connections are made, internally:

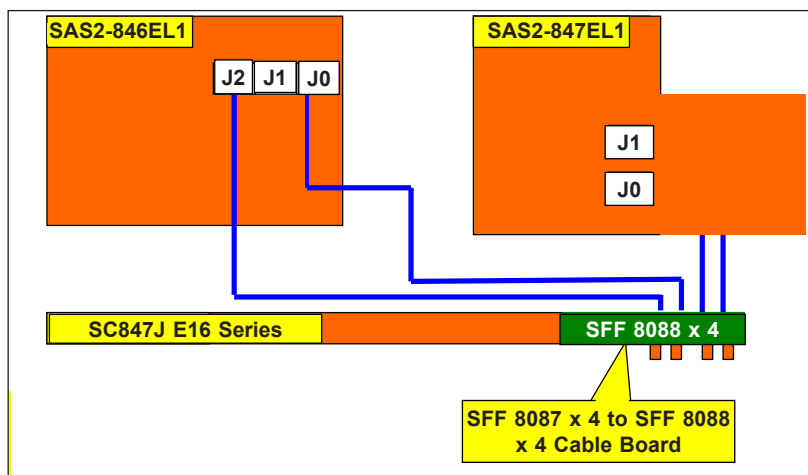


Figure E-6: SAS2-846EL and SAS2-847EL Connected to the Chassis
SC847J Chassis External Connectivity

It is important to understand that this is a JBOD chassis. A JBOD chassis has no motherboard, but uses an initiating head unit or a host/server unit. A JBOD chassis has an HBA or RAID card to host, and maps the drives in the JBOD chassis downstream. The head unit's RAID card cascades to this chassis using an external SFF 8088 to SFF 8088 cable, such as CBL-0166 as illustrated below.



Figure E-7: CBL-0166

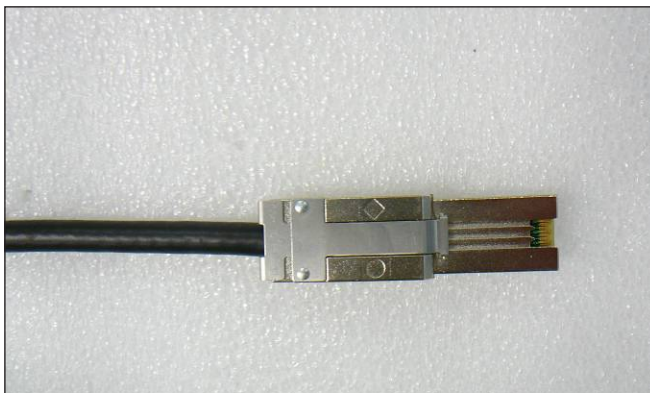


Figure E-8: External Cables for Connecting Head Units to JBODs

The RAID card in the head unit can cascade to the JBOD chassis either through its own expanders or through its own external SFF 8088 connector. Supermicro's AOC-SAS2LP-H4iR has one external connector for this purpose. See the Using a RAID/HBA Card to Connect Downstream section below. Block diagrams of the head unit to JBOD chassis connectivity combinations are in this section and in the following section titled, Using a RAID/HBA Card and Expander to Connect Downstream. Of the many possible combinations to connect a head unit to downstream JBODs, these two are the most popular.

Using a RAID/HBA Card To Connect Downstream

Below is block diagram of how a head unit may be cascaded to a SC847J E16 JBOD chassis downstream. In this example, each of the backplanes in the JBOD unit are connected to separate connectors on the RAID card in the head unit.

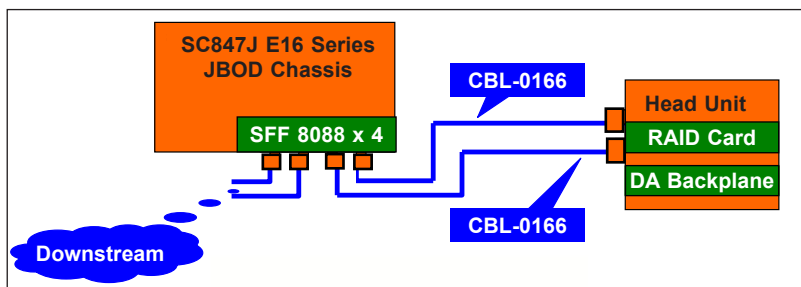


Figure E-9: Using a RAID/HBA Card and Expander to Connect Downstream

Using a RAID/HBA Card and Expander to Connect Downstream

The block diagram below illustrates a head unit being cascaded to an SC847J E16 series JBOD chassis downstream. Each of the backplanes in the JBOD unit are connected to separate connectors. One to the RAID card and the other to the expander in the head unit.

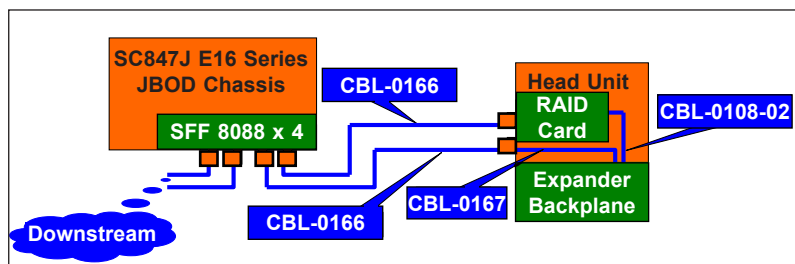


Figure E-10:
External Connector From Host Expander and External RAID to JBOD - Parallel

Notes

Disclaimer (cont.)

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